

PROCEEDINGS  
OF THE  
GENERAL MEETINGS FOR SCIENTIFIC BUSINESS  
OF THE  
ZOOLOGICAL SOCIETY OF LONDON.

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January 19, 1897.

Sir W. H. FLOWER, K.C.B., LL.D., F.R.S., President,  
in the Chair.

The Secretary read the following report on the additions to the Society's Menagerie during the month of December 1896:—

The registered additions to the Society's Menagerie during the month of December 1896 were 177 in number. Of these 43 were acquired by presentation, 2 by purchase, 3 were born in the Gardens, 81 were received by exchange, and 48 on deposit. The total number of departures during the same period, by death and removals, was 109.

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The Secretary exhibited a set of seven slightly enlarged photographs illustrating the mode in which the Rough-keeled Snake (*Dasypeltis scabra*) swallows an egg. These had been taken from a living specimen in the Society's Gardens (which had been received April 21st, 1894, and died October 4th, 1896), by Mr. R. F. Nesbit, by whom they had been presented to the Society. The specimen from which the photographs had been taken, measuring about 28 inches in length, was also exhibited.

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The Secretary also placed upon the table a specimen of the  
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Cerastes Viper (*Cerastes cornutus*), which had lately died in the Menagerie, having been received in exchange from the Zoological Gardens, Gizeh, Egypt, on December 14th, 1896, and having died January 11th, 1897. This was the specimen which had been frequently alluded to in the daily journals as having been tampered with, by having had two spines, probably taken from a Hedgehog or some other spiny mammal, inserted on the top of the head behind the eyes. After death it was ascertained that one of these spines had been driven through the head into the mouth and had, no doubt, caused the death of the animal, from which the poisonfangs had been removed.

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*Myrmecophaga jubata*, two days old.

Mr. Sclater exhibited a photograph of a young Ant-eater, born in the Zoological Garden of Herr Adolf Nill, at Stuttgart (cf. P.Z.S. 1893, p. 613), when two days old. So far as he knew, this was the first instance of this animal having bred in captivity. The parents had been in Herr Nill's garden more than three years.

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The following papers were read:—

1. On the Synonymy of the Butterflies of the Genus *Teracolus*. By GUY A. K. MARSHALL, F.Z.S., of Salisbury, Mashonaland.

[Received July 2, 1896.]

In view of the rapidly increasing recognition of the fact that many families of Butterflies exhibit very strongly-marked differences in their wet- and dry-season broods, it seems advisable that some attempt should be made to revise the nomenclature of these insects in the light of our wider knowledge. The phenomena of seasonal dimorphism are so varied and so inconstant that it is practically impossible at present to lay down any general rules for the determination of seasonal forms in Rhopalocera without making them so general as to be almost useless. Indeed, so susceptible are these insects to the influence of their environment, that some of the more widely ranging species exhibit different seasonal modifications in different localities.

This great complexity renders it extremely difficult for purely museum workers to accurately determine which characters are really specific and which are seasonal. For not only is it necessary to know the locality from which a given specimen may have come, but also some knowledge of the altitude and general conditions of the neighbourhood is requisite, and the climate is of even greater importance. The date of capture is again a detail of the highest significance when accompanied by a knowledge of the environment in which a species lives, but without this it is almost useless as a basis for argument, and is only apt to create confusion: moreover, an unusually wet or dry season may retard or accelerate the appearance of the various seasonal forms, so that without knowing the exact meteorological conditions of any given year the date of capture cannot be absolutely relied on, apart from the fact that the forms in many cases have a tendency to overlap. In this latter case the condition of the specimen when it is captured is often significant.

It will be therefore seen that the determination of species in genera which are known to be dimorphic must be based to some extent on the notes and observations of field-lepidopterists; and it is only for this reason that I have ventured to attempt a short revision of the nomenclature in so complicated a genus as *Teracolus*. I had at first intended dealing only with the African species occurring south of the Zambesi, almost all of which I have been able to observe in their natural haunts, but owing to the wide range of many of these Butterflies, and the close relationship and even actual identity of some of the African and Indian species, I have found it advisable to deal with the whole genus.

Apart from my field-observations during five years' residence in South Africa, I have had opportunities of investigating a very large

number of specimens of *Teracoli*, which I trust will minimise any probability of error in the conclusions at which I have arrived. Among the collections which I have seen I may mention those of Messrs. J. M. Hutchinson and C. N. Barker in Natal, that of the South-African Museum in Capetown, and those of Mr. Trimen and Miss E. M. Sharpe in London. To the latter lady I am further indebted for having kindly permitted me to examine several collections from Central East Africa which are in her charge, and notably the fine series of *Teracoli* collected by Mr. F. J. Jackson, which are of more than ordinary interest owing to the careful way in which the locality and date of nearly all the specimens are recorded, details which are painfully lacking in most collections. But this paper is chiefly based on the magnificent series of this genus contained in the British Museum, which possesses a very large number of type specimens, and I have to thank Mr. Butler for his courtesy in affording me every facility and assistance in his power.

With regard to the Asiatic species I have only seen those in the British Museum, which seem to thoroughly bear out the conclusions arrived at by Capt. E. Y. Watson in his most interesting paper on the Indian *Pierina* (Journ. Bomb. Soc. 1894), and these conclusions I have entirely adopted, as they are in complete accord with my experience in South Africa.

I have followed Mr. Butler and Mr. Trimen in including *Idmais* and *Callosune* in the genus *Teracolus*, for the species contained in the three genera are so closely connected as to render it impossible to draw any hard-and-fast line between them; and a multiplication of ill-defined genera appears to me to be in every way undesirable. As regards the arrangement of the species, the affinities of so large and varied a genus cannot be properly shown in linear form: and although the order which I have adopted may be open to objections, it gives a fair idea of the relationship of the species.

The genus *Teracolus* reaches its fullest development along the Eastern side of Africa, where all the largest and handsomest species are found; it ranges thence eastward through Arabia into N. India, in both of which areas it is fairly well represented, but becomes much scarcer in Central and South India, Ceylon being its southern limit. In Africa it ranges across the Continent to the West Coast in the South-Tropical and Extra-Tropical belts, and has been recorded along that side as far north as Senegal.

In this paper I provisionally recognize 72 species of *Teracolus*, of which 61 are Ethiopian and 19 Oriental, eight species being common to the two regions. Of these latter one species also occurs in the Palearctic region, viz. *T. evagore*, Klug (= *nouma*, Luc.), which has been recorded from Algeria; and one of the Oriental species also occurs in the Northern region, viz. *T. faustus*, Ol., which ranges into Asia Minor. Of the African species, 55 occur on the mainland, one is peculiar to the island of Socotra (*T. niveus*, Butl.), and five to Madagascar, viz. *T. zoë*, Grand., *T. mananhari*, Ward, *T. guenei*, Mab., *T. siga*, Mab., and *T. evanthe*, Boisd. Of the 55 Continental species,

21 occur in the South-African subregion (the northern boundaries of which are the Zambesi R. and Cunene R. on the East and West Coast respectively) and 5 of them are restricted to it. In the Oriental region as many as 8 out of the 19 species are not found further east than Arabia.

In any attempt to differentiate the species of *Teracolus*, or indeed of any other genus of Butterflies, two important facts must always be kept in view: firstly, the strong tendency of these insects to develop more or less marked local variations consequent upon the different conditions of their environment in different localities; and secondly, the phenomenon of seasonal dimorphism, owing to which the same species may present a strikingly different appearance at different times of the year, more especially in those countries whose climate is marked by well-defined wet and dry seasons. In dealing with local variation the general rule that I have laid down for myself is, that when two local forms exhibit a gradual mergence into one another so that intergrades occur which might be attributed to either of them, then those two forms constitute a single species. As an example I may refer to *T. evagore*, Klug. This is a North-African form which is represented in the West and South by the very different looking *T. phlegetonia*, Boisd. But throughout Central Africa we get the admittedly variable form *T. minans*, Butl., which shows beautifully the gradual change from *T. phlegetonia* to *T. evagore*, and I have therefore grouped them together, regarding the latter as a dwarfed and under-coloured climatic variety of the former, to which it is closely linked by a number of other so-called species. On the other hand, in the island of Socotra there is *T. niveus*, Butl., which is in every way far more like *T. evagore* than is *T. phlegetonia*; but the slight characters which distinguish it are quite constant (it being confined to the island), and therefore I regard it as a distinct species.

With regard to seasonal dimorphism, without a certain amount of field experience it is usually difficult to decide what may be the dry-season form of any given wet-season specimen and *vice versâ*; but the following general rules may give some idea of the seasonal modifications in *Teracolus*.

The dry-season form usually differs from that of the wet-season in the following respects: (a) its smaller size; there are, however, several species, such as *T. faustus*, *calais*, and *protractus*, in which the dry form is not reduced; (b) when there is any difference in the shape of the fore wing, that of the dry form is always more acute; (c) the reduction or complete absence of many of the black markings: in groups like *T. achine* and *T. evagore* this is very noticeable, but apparently it does not hold good in *T. calais*, *protractus*, or *chrysonome* and their allies, for in them the upperside markings do not vary; (d) the colouring of the underside of hind wings, which is perhaps the most reliable character of all: the white or green undersides of the wet-season forms assume a yellowish, sandy, or pinkish tinge and become more or less irrorated with fuscous atoms; the colouring, however, is often very variable in the same species and is



probably largely influenced by the surroundings, such as soil, leaves, &c., in which the insect habitually rests.

In addition to these there are instances in which a species may show seasonal modifications peculiar to itself. For example, in *T. pleione*, Klug, the area of the discal yellow is reduced in the dry season, which, however, does not occur in its near allies. Again, *T. hetaera*, Gerst., exhibits a marked reduction of the crimson apical patch; whereas in the dry-season form of *T. regina*, Trim., the purple patch is, if anything, rather larger and brighter, owing to the reduction of its black borders.

With regard to the nomenclature adopted in this paper, my object has only been to give a more or less clear definition of the species which constitute the genus *Teracolus*, and I have not attempted in any way to apply a system of nomenclature to the variations, whether local or otherwise, to which these species may give rise. Besides, at the present time the classification of such variations is in a somewhat chaotic state, at least so far as exotic Lepidoptera are concerned, and the same form may be referred to by various authors either as a true species, subspecies, local race, climatic variation, variety, or seasonal form. This is, no doubt, due to the lack of any standard definition, so that each man is a law unto himself in the matter. However, there is no doubt that it will be necessary to apply names to a few of the more marked local forms, which I regard as incipient species; and in such cases the trinomial system of nomenclature seems to me to be the clearest and most satisfactory, as we thus keep in view the gradual evolution of the parent species. But at the same time I cannot inveigh too strongly against the idea that every slight deviation from the typical colouring of a species must be encumbered with a Latin name, which appears to me to be thoroughly pernicious, and stultifies the very object of nomenclature, which is to elucidate and not to confuse. This variety-mongering has reached such a pitch in Europe that even artificial varieties are adorned with "scientific" names, which has certainly not been done in the interests of science, but is due partly to a misguided ambition on the part of the gentlemen who coin the names, and partly to trade motives. With regard to the naming of seasonal forms, I can see no more necessity for it than for the naming of sexual forms; and a simple solution of the difficulty would be the adoption of three standard signs or letters, to signify wet, dry, and intermediate forms respectively, in the same way that signs are used to distinguish the sexes.

#### 1. *TERACOLUS SUBFASCIATUS*.

*Teracolus subfasciatus*, Swainson, Zool. Ill., Ins. ii. pl. 115 (1823).

*Ptychopteryx bohemani*, Wallengren, K. Sv. Vet.-Akad. Handl.; Lep. Rhop. Caf. p. 18 (1857).

On the eastern side of South Africa this swift-flying *Teracolus*

seems restricted to the northern half of the Transvaal<sup>1</sup>; but on the west it has a more extensive range, occurring from the Orange River to Ovampoland. In the summer form the underside of hind wings is pure yellowish, but in the dry-season form it is thickly speckled with sandy hatching.

## 2. TERACOLUS ERIS.

*Pontia eris*, Klug, Symb. Phys., Ins. pl. vi. figs. 15 & 16 (1829).

*Idmais fatma*, Felder, Reis. Novara, Lep. p. 189, pl. xxv. fig. 3 (1865).

*Teracolus abyssinicus*, Butler, Ann. Mag. N. H. (4) xviii. p. 486 (1876).

*Idmais maimuna*, Kirby, Pr. Roy. Dubl. Soc. p. 46 (1880).

*Teracolus johnstoni*, Butler, Ent. Mo. Mag. xxiii. p. 29 (1886).

*Teracolus opalinus*, Butler, Ent. Mo. Mag. xxiii. p. 30 (1886).

*Teracolus agoye* ♀?, Butler, Proc. Zool. Soc. p. 572 (1894).

This wide-ranging and variable species has received many names, none of which seem worthy of specific distinction. *Idmais fatma*, Feld., is founded on a very lightly marked dry-season female from Kordofan; and a still lighter specimen was tentatively attributed to female *T. agoye*, Wallgr., by Butler. There are three specimens of *T. abyssinicus*, Butler, in the British Museum; they are clearly yellow females of *T. eris*, the type being rather more heavily marked than usual. *Idmais maimuna*, Kirby, is quite indistinguishable from *T. eris*; and *T. johnstoni*, Butl., is only the ordinary South-African dry-season form of the species. The type of *T. opalinus*, Butl., is an unusually large female from Delagoa Bay, in which the upper white spots in apical black patch are almost obsolete, but it is certainly nothing but *T. eris*. This species ranges practically throughout Africa, with the exception of the extreme S.W. and N.W., and even extends into Arabia.

## 3. TERACOLUS COLIAGENES.

*Euchloë coliagenes*, Butler, Ann. Mag. N. H. (3) xx. p. 216 (1867).

The single type in the British Museum is a yellow female from the White Nile, which seems to link *T. eris* to the *T. fausta* group.

## 4. TERACOLUS AGOYE.

*Anthopsyche agoye*, Wallengren, K. Sv. Vet.-Akad. Handl.; Lep. Rhop. Caf. p. 15 (1857).

*Anthocharis eosphorus*, Trimen, Trans. Ent. Soc. (3) i. p. 523 (1863).

This species seems to occur only in the strip of country lying between 20° and 26° S. lat., from Damaraland to the Eastern Transvaal. In the latter country I found it fairly plentiful within a limited area along the Olifants River in May 1893.

<sup>1</sup> Since writing this I have seen a male taken by Mr. R. Crawshay in Nyasaland, and a female taken by Dr. Ansorge in Uganda.

5. *TERACOLUS BOWKERI*.

*Teracolus bowkeri*, Trimen, Trans. Ent. Soc. p. 358 (1883).

The South-western representative of *T. agoye*, to which it is very nearly allied, but all the distinctions dwelt on by Mr. Trimen appear to be constant. According to him it does not occur north of 26° S. lat., being only recorded from Namaqualand, Griqualand West, and Basutoland.

6. *TERACOLUS ZEPHYRUS*, sp. nov.

Size and shape of *T. agoye*, Wallgr.

♂. *Upperside*.—*Fore wing* white, with a mere trace of black speckling at base, and a fine black line along costa as far as apical patch; the latter is of the same size and tint as in *T. agoye*, but the black border along its inner edge is much narrower and more clearly defined; along the inner side of this border is an ill-defined suffusion of sulphur-yellow. The patch is bordered outwardly by a narrow fuscous edging, which radiates slightly on nervules. *Hind wing* white, the only marking being a few black scales at base. *Underside* pure white throughout, without markings of any kind.

This interesting species is in some respects intermediate between *T. agoye* and *T. bowkeri*, but Mr. Trimen, to whom I have shown the type, agrees with me that it is quite distinct from either. It may at once be distinguished from *T. agoye* by the complete absence of black neurulation or discal black clouding in fore wing, and by the presence of the black line along costa and the yellow on disc. The two latter points also distinguish it from *T. bowkeri*, from which it further differs in the colour of the apical patch and its inner black edging.

Founded on a single male collected by Dr. Donaldson Smith at "Selou," in Somaliland; this specimen is in Miss E. M. Sharpe's collection, who has attributed it to *T. agoye* in a paper now in the press (Proc. Zool. Soc. 1896, p. 535). Miss Sharpe tells me that Dr. Smith took three other specimens, which I have not seen.

7. *TERACOLUS FAUSTUS*.

*Papilio fausta*, Olivier, Voy. Emp. Othom., Atl. pl. 33. fig. 4 (1801).

*Idmais faustina*, Felder, Reise Novara, Lep. p. 190 (1865).

*Teracolus solaris*, Butler, Proc. Zool. Soc. p. 135 (1876).

*Teracolus rosaceus*, Butler, loc. cit. p. 134, pl. vii. fig. 6 (1876).

*Teracolus oriens*, Butler, loc. cit. p. 134, pl. vii. fig. 7 (1876).

*Teracolus vi*, Swinhoe, Proc. Zool. Soc. p. 437, pl. xxx. figs. 6 & 7 (1884).

This species varies somewhat in the development of the black markings, and has consequently been much split up, but a careful examination of the fine series in the British Museum has convinced me that the differences are worthless as specific characters. It inhabits N.W. India, from Disa to the foot of the Himalayas,



and further west it has been recorded from Afghanistan, Asia Minor, and the Sinai Peninsula.

8. *TERACOLUS FULVIUS*.

*Idmais fulvia*, Wallace, Trans. Ent. Soc. p. 392, pl. ix. fig. 5 (1867).

*Teracolus tripuncta*, Butler, Proc. Zool. Soc. p. 149, pl. xv. fig. 4 (1880).

*Teracolus surya*, Moore, Journ. As. Soc. Beng. lii. p. 45 (1885).

*Teracolus palliseri*, Butler, Ann. Mag. N. H. (6) i. p. 418 (1888).

This is the Southern representative of *T. faustus*, being recorded from Khandesh and Ganjam, on the west and east coast of India, and occurs from there southward to Ceylon.

9. *TERACOLUS CALAIS*.

*Papilio calais*, Cramer, Pap. Exot. iv. pl. 53. C & D (1782).

*Pontia dynamene*, Klug, Symb. Phys., Ins. pl. vi. figs 17 & 18 (1829).

*Teracolus carnifer*, Butl. Proc. Zool. Soc. p. 138, pl. vii. figs 8 & 9 (1876).

This is a wide-ranging but comparatively stable species. The only locality in Extra-Tropical South Africa from which it has been recorded is Delagoa Bay. From there it ranges north along the Eastern littoral (including Madagascar), but does not appear to become plentiful till near the Equator, whence it continues through Somaliland, Abyssinia, and Arabia, into North-western India; on the west side of Africa, it has been recorded from the Congo. It appears to me impossible to separate *T. dynamene*, Klug, from *T. calais*. The lighter-coloured typical form seems to predominate in Africa and *T. dynamene* in India, but the latter is also common in Equatorial East Africa. In Arabia both forms occur, and there is in the British Museum a female *T. calais* from Aden which is noted as having been taken in copulâ with a male *T. dynamene*. *T. carnifer*, Butler, from Karachi (November), is clearly a dry-season form of this species, the bright green of the underside being modified into a sandy pinkish. In January 1896 I took a white female of this species at Beira.

10. *TERACOLUS AMATUS*.

*Papilio amata*, Fabricius, Syst. Ent. p. 476 (1775).

*Papilio cypræa*, Fabricius, Mant. Ins. ii. p. 22 (1787).

*Teracolus modestus*, Butler, Proc. Zool. Soc. p. 137 (1876).

*Teracolus kennedii*, Swinhoe, Proc. Zool. Soc. p. 440 (1884).

This species is nothing more than a local race of the preceding, but as the distinctions appear fairly constant and the two forms do not merge too much into one another, I prefer to keep them apart. *T. amatus* therefore represents *T. calais* in Central and Southern India and Ceylon. *T. kennedii* is identical with *T. amatus*; and I cannot accord specific rank to *T. modestus*, which is only a rather

more heavily marked variety of the same species, their identity being well shown in the British Museum series, which represents a gradual and unbroken gradation from one to the other. There are three specimens in the British Museum labelled *T. cypræa*; two of them are, in my opinion, *T. calais* and the third a white female of *T. amata*. Capt. Watson, following Mr. Butler's identification of the insect, considers *T. cypræa* to be a synonym of *T. calais*. Fabricius's descriptions are delightfully vague, but I prefer to follow Boisduval in believing that in *T. cypræa* he was describing the female of his *T. amata*.

#### 11. TERACOLUS PROTRACTUS.

*Teracolus protractus*, Butler, Proc. Zool. Soc. p. 137 (1876).

This handsome species is purely Asiatic, being recorded from Kutch, Punjab, and Baluchistan. As Capt. Watson has pointed out, the seasonal forms are well marked on the underside, but, curiously enough, they have never been separated like so many others.

#### 12. TERACOLUS OCELLATUS.

*Teracolus ocellatus*, Butler, Proc. Zool. Soc. p. 767 (1885).

This species is of interest owing to the exactly intermediate position it occupies between *T. protractus* and *T. phisadia*. I have seen only two specimens—one is in Miss E. M. Sharpe's collection, and the type in the British Museum; they are both from Somaliland.

#### 13. TERACOLUS PHISADIA.

*Pieris phisadia*, Godart, Ency. Méth. ix. p. 132 (1819).

*Pontia arne*, Klug, Symb. Phys., Ins. pl. viii. figs. 1-4 (1829).

*Idmais philumene*, Mabille, Compt. rend. Soc. Belg. p. 106 (1880).

In this species the male is quite stable, as is the case throughout this group, but the female is very variable, presenting four gradations: (1) like the male; (2) yellow, with base of primaries suffused with pink; (3) pure yellow; (4) white. The latter might easily be mistaken for the Indian *T. puellaris*, Butler, but may be distinguished by the curved macular discal stripe on underside of secondaries. This is the Western representative of *T. protractus*, occurring in Arabia, through Abyssinia to Senegal, but apparently not south of 10° N. lat. M. Mabille records it from Madagascar and India also; but this must be received with caution, for his idea of the species seems to be a little vague, as he refers to it as "a pretty species intermediate between *T. calais* and *T. dynamene*"!

#### 14. TERACOLUS PUELLARIS.

*Teracolus puellaris*, Butler, Proc. Zool. Soc. p. 136 (1876).

*Teracolus ochreipennis*, Butler, Proc. Zool. Soc. p. 136 (1876).

*Teracolus rorus*, Swinhoe, Proc. Zool. Soc. p. 438, pl. xxxix. fig. 8 (1884).

Occurs in N.W. India from Kutch to Punjab and does not seem

to come further west than Baluchistan. *T. puellaris*, with a green underside, is the wet-season form, and *T. ochrapennis* and *T. rorus*, with sandy-coloured undersides, represent the dry-season form.

#### 15. TERACOLUS VESTALIS.

*Teracolus vestalis*, Butler, Proc. Zool. Soc. p. 135, pl. vii. fig. 10 (1876).

*Teracolus intermissus*, Butler, Proc. Zool. Soc. p. 152, pl. xxiv. fig. 4 (1883).

*Teracolus dubius*, Swinhoe, Proc. Zool. Soc. p. 439 (1884).

*Teracolus peelus*, Swinhoe, Proc. Zool. Soc. p. 439, pl. xxxix. fig. 9 (1884).

This species is very nearly allied to the last, and is perhaps doubtfully distinct. However, a few small distinctions appear to be constant: thus, *T. vestalis* is larger, with the black border on upperside of secondaries proportionately narrower; on the underside of primaries the lowest of the three black spots near posterior angle is small and well-defined, but in *T. puellaris* it is large and suffused along inner margin; lastly, the females of *T. vestalis* have a macular discal ray on the underside of secondaries, which appears to be absent in *T. puellaris*. With regard to the synonymy, *T. vestalis* and *dubius* are the same; *T. intermissus* is the dry-season form, and *T. peelus* is merely the yellow female of it. This species has much the same range as *T. puellaris*, but has been recorded a little further west, namely from Fao in the Persian Gulf.

#### 16. TERACOLUS CASTALIS.

*Idmais castalis*, Standinger, Exot. Schmett. p. 43, pl. xxiii. (1885).

The East-African representative of *T. vestalis*, Butl. It occurs in the country lying between Victoria Nyanza and the coast, and as far north as Somaliland.

#### 17. TERACOLUS PRÆCLARUS.

*Teracolus præclarus*, Butler, Proc. Zool. Soc. p. 769, pl. xlvii. fig. 7 (1885).

A very distinct and handsome species, of which I have seen only the male and female types in the British Museum from Somaliland.

#### 18. TERACOLUS CELIMENE.

*Anthocharis celimene*, Lucas, Rev. Zool. p. 426 (1852).

*Anthopsyche pholoë*, Wallengren, Wien. ent. Monatsch. iv. p. 35 (1860).

*Anthocharis phænon*, Trimen, Trans. Ent. Soc. (3) i. p. 522 (1863).

*Anthocharis amina*, Hewitson, Exot. Butt. iii. *Anth.* pl. i. figs. 1-3 (1866).

From the descriptions given by Wallengren and Trimen, I have but little doubt that this must be the dry-season form of *T. celimene*, all the distinctions dwelt on by Trimen being quite in

accord with ordinary seasonal variation<sup>1</sup>. Its range is similar to that of several of the *Teracoli*; its stronghold is on the eastern side of Africa, where it occurs from Abyssinia as far south as the North-west Transvaal, but in the Southern Tropic it continues westward to Damaraland. It does not seem to be anywhere very plentiful.

#### 19. TERACOLUS PROTOMEDIA.

*Pontia protomedia*, Klug, Symb. Phys., Ins. pl. viii. figs. 13 & 14 (1829).

This handsome and distinct species seems to be wonderfully stable in its colouring. It ranges from Arabia, through Somaliland, Nubia, Dongola, and Equatorial East Africa to Madagascar.

#### 20. TERACOLUS VESTA.

*Idmais vesta*, Reiche, Fér. & Gal. Voy. Abys. pl. xxxi. figs. 7 & 8 (1849).

*Teracolus amelia*, Lucas, Rev. Zool. p. 437 (1852).

*Teracolus velleda*, Lucas, Rev. Zool. p. 428 (1852).

*Teracolus mutans*, Butler, Ann. Mag. N. H. (4) xix. p. 459 (1877).

*Teracolus argillaceus*, Butler, Ann. Mag. N. H. (4) xix. p. 459 (1877).

*Teracolus haningtonii*, Butler, Ann. Mag. N. H. (5) xii. p. 104 (1883).

*Teracolus catachrysops*, Butler, Ann. Mag. N. H. (6) ii. p. 178 (1888).

*Teracolus rhodesinus*, Butler, Proc. Zool. Soc. p. 663 (1893).

*Teracolus bipartitus*, Rothschild, Nov. Zool. p. 537 (1894).

Although this species is fairly stable in South Africa, it exhibits many variations in the Central North Tropical areas, but a careful examination of them shows that they merge so gradually into one another as to make it impossible to accord specific rank to any of them. *T. mutans* from Lake Nyasa and Njemps seems to me quite inseparable from *T. vesta*; and at the same time it varies so much in the direction of *T. catachrysops* (Central East Africa), that the female type of that form might equally well stand as *T. mutans*. Again, the series in Mr. Jackson's collection from East Africa shows the impossibility of separating *T. haningtonii* from *T. catachrysops*; and the more extreme specimens of this latter form merge right into *T. amelia*, Luc., from Abyssinia and Senegal. *T. rhodesinus*, Butl., founded on a single male from Lake Mweru, combines the characters of *T. haningtonii* and *mutans*, and is probably an intermediate seasonal form. Judging from the description of *T. bipartitus*, Roths., I cannot distinguish it from a female of *T. haningtonii*, Butl., although the author associates it so closely with *T. celimene*, Luc. *T. argillaceus*, Butl., is the usual South-African dry-season form of the species.

Owing, therefore, to the intricate interrelation of all the above

<sup>1</sup> I have since seen the types of Mr. Trimen's *Anthocharis phænon* (= *pholœ*, Wallgr.), and I am satisfied that they are dry specimens of *T. celimene*, with which opinion Mr. Trimen himself coincides.



forms, and to the fact that typical specimens occur throughout the eastern side of Africa, I think it advisable to regard them as merely synonyms of one variable species. *T. vesta* ranges practically through the whole of Tropical Africa, but south of the Tropics it does not occur westward of the Transvaal and Natal.

21. *TERACOLUS ANSORGEI*, sp. nov.

♂. *Upperside* bright ochreous with black markings. *Fore wing*: Pattern and colouring similar to that of *T. aurigineus*, Butl., except in the following points: (a) there is no trace of the whitish-grey patch at base, it being replaced by slight blackish clouding; (b) the discal zigzag black band is narrower and ends abruptly on inner nervure, instead of being continued to, and suffused along, inner margin. Neuration more finely black throughout. *Hind wing*: Ground-colour as in fore wing, base with very slight fuscous clouding, and a curved dentate band across disc of same colour as basal clouding, much lighter than same feature in *T. aurigineus*, and continuous, not macular; a broad black hind-marginal band, containing inter-nervular dots of ground-colour. Neuration black beyond middle only.

*Underside*. Pattern exactly like that of *T. vesta*, Reiche. *Fore wing*: Ground-colour somewhat lighter than above; discocellular spot distinct, smaller than above; zigzag discal band of upperside reproduced, but macular, being divided by nervules which are dark pink in colour, near costa the band assumes a brownish tinge; beyond this a row of yellow spots, large below first median nervule and of same colour as base, but above it they are smaller and of a pale yellow tint; beyond this a narrow curved brownish line, which is succeeded by a hind-marginal row of subquadrate pale yellow spots, which diminish towards posterior angle. *Hind wing*: Pale yellow, with basal half of costa and a ray along inner nervure ochreous yellow. A longitudinal ray from base in cell and a shorter one above it deep pink; an irregular transverse band of the same colour passing through the extremity of discoidal cell, then a band of ground-colour and a discal angulated brownish-pink band about middle of wing; then another broader band of yellow, divided into spots by the intersecting pink nervules; beyond this a narrow curved line of brownish pink, and finally a hind-marginal row of subquadrate spots of ground-colour. A thin black line runs along extreme hind margin of both wings, which is present in *T. vesta* but absent in *T. aurigineus*.

Female same as the male, but the colouring duller on both surfaces.

This is a most interesting species, combining as it does the upperside colouring of *T. aurigineus* with the underside colouring of *T. vesta*, being at the same time quite distinct from either species. From the former it may be at once distinguished by the complete absence, in the male, of the basal white patch in fore wing, and the great reduction of the black discal band in the hind wing, but the underside is hardly distinguishable from some specimens of the variable *T. vesta* (more particularly of the *T. mutans* form).

Founded on three males and one female (wet-season specimens) caught on January 5, 1894, at Parumbira in German East Africa, by Dr. Ansonge, to whom I have dedicated the species.

## 22. TERACOLUS AURIGINEUS.

*Teracolus aurigineus*, Butler, Ann. Mag. N. H. (5) xii. p. 103 (1883).

*Teracolus venustus*, Butler, Proc. Zool. Soc. p. 94 (1888).

This species occurs in Equatorial East Africa, being recorded from Wadelai southward to Lake Nyasa, appearing to be common wherever it occurs. *T. venustus*, Butl., from Kilimanjaro, is the dry-season form, being smaller and having the underside of a more pinkish tinge, but the colouring above is unchanged.

## 23. TERACOLUS DOUBLEDAYI.

*Idmais doubledayi*, Hoppfer, Peters, Reise Mossamb. p. 362 (1862).

*Idmais chrysonome*, Doubleday (*nec* Klug), Gen. D. Lep. pl. vii. fig. 5 (1847).

*Idmais vesta*, Trimen (*nec* Reiche), Rhop. Afr. Aust. p. 62 (1862).

*Idmais hewitsoni*, Kirby, Syn. Cat. Lep. p. 498 (1871).

This is the West-African representative of *T. vesta*, Reiche. The specimens in the British Museum are from Angola and the Congo.

## 24. TERACOLUS CHRYSONOME.

*Pontia chrysonome*, Klug, Symb. Phys., Ins. pl. vii. figs. 9-11 (1829).

*Teracolus helvolus*, Butler, Proc. Zool. Soc. p. 94 (1888).

*T. chrysonome* has not been recorded south of Kilimanjaro, occurring northward as far as Dongola and Somaliland. The smaller *T. helvolus* with its pinkish underside colouring represents the dry-season brood.

## 25. TERACOLUS GAUDENS.

*Teracolus gaudens*, Butler, Ann. Mag. N. H. (4) xviii. p. 486 (1876).

*Teracolus arenicolens*, Butler, Ent. Mo. Mag. p. 81 (1884).

Founded on a single male from Abyssinia. It differs from *T. chrysonome* in the reduction of the black discal ray in fore wing and its larger basal grey patch. A long series, however, would probably show them to be inseparable. *T. arenicolens*, founded on a single specimen from Arabia, is clearly the dry-season form.

## 26. TERACOLUS PLEIONE.

*Pontia pleione*, Klug, Symb. Phys., Ins. pl. viii. figs. 7 & 8 (1829).

*Idmais miriam*, Felder, Reise Nov., Lep. p. 190, pl. xxvii. figs. 3 & 4 (1865).

*Teracolus chrysomela*, Butler, Cist. Ent. p. 244 (1874).



*Idmais eucheria*, Mabille, Bull. Soc. Ent. Fr. p. 174 (1879); Grand. Hist. Madag. pl. 41. fig. 5 (1887).

There seems to be little doubt that *Idmais miriam*, Feld., is only the dry-season form of *T. pleione* (Kl.), having the black borders and discal yellow markings rather more reduced. *Idmais eucheria*, Mab., is unquestionably referable to this species. *T. pleione* is essentially an Arabian species, but there is one specimen in the British Museum from the White Nile. M. Mabille records it from Madagascar, whence he also records two other Arabian species, viz. *phisadia*, God., and *halimede*, Klug. If this be correct, it is a fact of the highest importance in geographical distribution, but the carelessness which is unfortunately so evident in much of M. Mabille's work prevents my accepting these records without further evidence.

#### 27. TERACOLUS HELIOCAUSTUS.

*Teracolus heliocaustus*, Butl. Proc. Zool. Soc. p. 768, pl. xlvii. figs. 8 & 9 (1885).

This species is the Somali representative of the Arabian *T. pleione* and *T. halimede*. It resembles the latter in the distribution of yellow in both wings, but is nearer *T. pleione* in its size and in the absence of the grey at base of fore wings.

#### 28. TERACOLUS VENOSUS.

*Idmais venosa*, Staudinger, Exot. Schm. p. 43, pl. xxiii. (1885).

This is a very distinct little species, being pure white above, with the ends of nervules and a narrow border black in primaries, and comes closest to the *T. halimede* group. As yet it has only been found on the east coast of Africa, close to the Equator.

#### 29. TERACOLUS LEO.

*Anthocharis leo*, Butler, Ann. Mag. N. H. (3) xvi. p. 397 (1865).

*Teracolus halimede*, Butler (part.), Proc. Zool. Soc. p. 133 (1876).

This is the Central-African representative of the Arabian *T. halimede* (Kl.), from which it differs constantly in the restriction of the yellow patch in fore wing below 3rd median nervule. It appears to be fairly common in the country lying between Victoria Nyanza and the coast, and Butler's type specimen is from the White Nile<sup>1</sup>. The seasonal forms are well marked, the black borders being almost obsolete in the dry season and the underside of hind wings covered with grey freckling.

#### 30. TERACOLUS HALIMEDE.

*Pontia halimede*, Klug, Symb. Phys., Ins. pl. vii. figs. 12-15 (1829).

*Pontia acaste*, Klug, ibid. pl. vii. figs. 16, 17 (1829).

*Pieris polycaste*, Boisduval, Sp. Gén. Léop. i. p. 525 (1836).

<sup>1</sup> Mrs. Lort Phillips captured a single male in Somaliland (*teste* E. M. Sharpe).

*Teracolus celestis*, Swinhoe, Proc. Zool. Soc. p. 435, pl. xxxix. figs. 1, 2 (1884).

Klug in describing his *Pontia acaste* says that it might prove to be only a white female of his *P. halimede*, and his conjecture is no doubt correct. I can also find no character which would entitle *T. celestis*, Swinh., to specific rank. This is a purely Arabian species. Butler records it from the White Nile (P. Z. S. 1876, p. 133), but the locality only applies to *T. leo*, Butl., which at that time he considered to be identical with *T. halimede*. I have already referred to the fact that M. Mabille records it from Madagascar.

### 31. TERACOLUS ZOË.

*Anthocharis zoë*, Grandidier, Rev. Zool. p. 272 (1867), and Grand. Hist. Madag. pl. 40. figs. 3-5.

This handsome and curious species is peculiar to Madagascar, but presents affinities to several very distinct groups. The general character of the upperside markings brings it very close to *T. halimede*, but in its large purple apical patch it approaches *T. celimene*, Luc., and its rather distinctive underside markings closely resemble those of *T. mananhari*, Ward.

### 32. TERACOLUS MANANHARI.

*Pieris mananhari*, Ward, Ent. Mo. Mag. p. 224 (1870).

*Anthocharis flavida*, Mabille, Bull. Soc. Ent. Fr. p. 37 (1877).

*Teracolus nothus*, Mabille, Grand. Hist. Madag. p. 290, pl. xxxvi. a. figs. 2, 2 a (1886).

A very curious and somewhat isolated species peculiar to Madagascar. *Anthocharis flavida* is founded on smaller specimens in which the underside of secondaries is clouded with sandy or pinkish hatching, with a darker angulated ray on disc, and evidently represents the dry-season form. *T. nothus* is an intermediate seasonal form.

### 33. TERACOLUS ELGONENSIS.

*Teracolus elgonensis*, E. M. Sharpe, Proc. Zool. Soc. p. 191, pl. xvi. fig. 6 (1891).

A most interesting and distinct little species, allied to *T. eunoma*, Hoppl., but readily distinguished by its much smaller size, its greenish-white ground-colour, and by the very different position of the three small crimson spots near apex. I have seen the unique type, a male, which is in the collection of Mr. F. J. Jackson, who captured it on Mt. Elgon, to the north of Victoria Nyanza.

### 34. TERACOLUS EUNOMA.

*Pieris eunoma*, Hoppfer, Bericht Ak. Berl. p. 640 (1855); and Reise Mossamb. pl. xxiii. figs. 1, 2 (1862).

*Teracolus chromiferus*, Rothschild, Nov. Zool. p. 538 (1894).

In spite of the larger size of *T. chromiferus* and its larger apical patch, which consists of four spots instead of two, I think Hewitson

was right in referring his specimen to *T. eunoma*, as the apical patch of the former is very variable, and two of the spots show a tendency to become obsolete; also the discal row of spots on underside of hind wing, which is absent in typical *T. eunoma*, is partially obsolete in two specimens of the *T. chromiferus* form that I have seen. Beyond the Hewitson male and that described by Mr. Rothschild I only know of four others, which were caught by myself at Beira, East Africa, in January 1896. One of these males was taken *in copulá*, and the following is the description of the female:—

*Upperside*.—Yellowish white, with black spots and markings, without any coloured apical patch. *Fore wing*: Costa narrowly edged with fuscous. Terminal discocellular spot very large. Beyond middle a curved row of six large black spots, that on costa being larger than the rest. Black hind-marginal border fairly broad at apex, narrowing towards interior angle, radiating very broadly on nervules so as to give it a strongly dentate appearance; the radiations on third subcostal and upper radial nervules extended so as to just touch first and second spots of discal row. Base of wing very broadly clouded with fuscous, almost as in *T. anne*, Wallgr. *Hind wing*: Basal fuscous suffusion much fainter and more restricted than in fore wing. Hind-marginal nervular spots very large and diffuse, produced somewhat on nervules inwardly.

*Underside*.—*Fore wing*: Apical patch pale yellowish. Discal row of spots as on upperside, but first spot divided into two discocellular spots as above; an ill-defined patch of fuscous clouding in the middle of the discoidal cell. *Hind wing*: As in male, but the ground-colour of a deeper, richer yellow, and the black spots of angulated discal row all strongly marked.

In Miss Sharpe's collection I found another female which is clearly attributable to this species, but differs from the foregoing specimen in having the hind-marginal border suffused so as to enclose the four upper black spots of discal row, leaving three small white spots in the black apical patch. I have also seen three similar females collected by Dr. Ansorge in East Africa. I have not yet seen a dry-season specimen of this species.

### 35. *TERACOLUS HETERA*.

*Callosune hetera*, Gerstcker, Arch. f. Nat. xxxvii. p. 357 (1871).

*Teracolus puniceus*, Butler, Proc. Zool. Soc. p. 72 (1888).

*Teracolus foliaceus*, Butler, *ibid.* p. 573, pl. xxxvi. fig. 7 (1894).

This species in its summer garb is distinguished from *T. eunoma* by its much larger crimson-lake apical patch, and the distinct fine black neuration on the upperside of both wings, the hind wings in *T. eunoma* having none at all. Moreover the underside of hind wing is only faintly tinged with yellowish, and bears a discal ray from costa similar to that in *T. jalone*, Butl.; whereas the same part in *T. eunoma* is always of a bright yellow colour, and presents an angulated discal row of spots exactly like that in the wet-season

form of *T. regina*, Trim. I have no doubt whatever that *T. puniceus*, Butl., is merely the dry-season form of this species, the size of the apical patch and the upperside black markings being somewhat reduced, and the underside of secondaries having a pinkish tinge with faint grey hatching and a distinct discal ray from costa. I cannot distinguish the single female on which Mr. Butler founded his *T. foliaceus* from the female of *T. hetara*, of which I have seen a long series. As usual, the colouring of the female is highly variable, ranging from dull white, through opalescent or yellowish white to bright yellow; the black borders are very heavy and radiate somewhat on nervules in hind wings; there is no black bar on inner margin of fore wings, but strong basal grey clouding; the spots in apical black are small, white or yellowish in colour, and usually more or less suffused with crimson scales. At present *T. hetara* has been recorded from the Sabaki R. and Victoria Nyanza on the south, northward to Wadelai and Somaliland.

### 36. TERACOLUS LORTI.

*Teracolus lorti*, E. M. Sharpe, Proc. Zool. Soc. 1896, p. 527.

I have not been able to examine the types of this species, but judging from Miss Sharpe's description it is very nearly allied to the foregoing species, and is perhaps doubtfully distinct; but owing to the unusually large size of the apical patch and its combination with an essentially dry-season underside colouring, I feel constrained to keep it separate. The species was founded on a male and two females, captured in March 1895 by Mrs. Lort Phillips in the Goolis Mts., Somaliland, and it is worth noting that specimens of *T. hetara* were caught at the same time.

### 37. TERACOLUS IONE.

*Pieris ione*, Godart (nec Trim.), Enc. Méth. ix. p. 140 (1819).

*Anthocharis ione*, Boisduval, App. Voy. Deleg. Afr. Aust. p. 587 (1847).

*Anthocharis crone*, Angas, Kaf. Illust. pl. xxx. fig. 3 (1849).

*Anthopsyche speciosa*, Wallengren, K. Sv. Vet.-Akad. Handl.: Lep. Rhop. Caf. p. 16 (1857).

*Euchloë jobina*, Butler, Cist. Ent. i. p. 14 (1869).

As there appears to be some difference of opinion as to what is the true *Pieris ione* of Godart, I have taken some trouble to satisfy myself on the matter. Mr. Trimen considers that Godart was describing the form named *T. jalone* by Dr. Butler, whereas the latter gentleman places *T. speciosa*, Wallgr., as *T. ione*, which seems to be the more generally accepted view. A careful consideration of the original description and a good series of both species leads me to believe that the latter decision is nearer the truth. Godart's description does not exactly suit any specimen that I have seen, but if we are to be satisfied with the nearest we can get to it, *Anthopsyche speciosa*, Wallgr., has certainly the first claim. The most important point seems to be the underside colouring, which he



describes thus:—"below all four wings are white, with black marginal spots and the costa of hind wings orange at base." Mr. Trimen contends that as *T. speciosa* has the hind wings yellow below, it cannot be this species; but I have seen not a few specimens in which the yellow is reduced to but the faintest tinge, and which would thus very well suit the description; moreover the hind-marginal spots are a normal feature in *T. speciosa*, but whenever they occur in *T. jalone*, which is very seldom, they are always accompanied by strong black neurulation and a distinct blackish discal ray from costa, to which striking features no reference is made by Godart. But Mr. Trimen's chief contention is that at the time when Godart described his insect there were no Europeans in Natal, which is the only locality where *T. speciosa* has been found at the present day. Godart gives no locality for his specimen: but this argument does not seem sufficiently cogent to induce me to apply his name to a species which clearly does not agree with his description, when we know of another species which suits it reasonably well<sup>1</sup>.

*T. ione*, as here restricted, is a very local insect, being only known at present from the coast-belt of Natal, and is replaced a short distance inland by the wide-ranging and variable *T. phlegyas*, Butl. (= *jalone*, Butl.). *T. jobina*, Butl., is the dry-season form of *T. ione*.

<sup>1</sup> [The point here discussed cannot now be settled; only probabilities can be weighed, in conjunction with the comparison of an incomplete description with the known varieties of the two nearly related forms in question. Perhaps I may here quote what I published in 1889 (S. Afr. Butt. iii. p. 103):—"It is not practicable to determine with certainty the exact form of male upon which Godart (*loc. cit.*) founded his *Pieris ione*, his description being too brief and no locality being given; but as he describes the underside as white, and as it is improbable that he should have had before him in the year 1818 any of the more locally restricted Southern forms, I consider it judicious to regard as the typical *T. ione* the form [*ione* of Reiche and of Hopffer, *jalone* of Butler, &c.] I have above described, which has a very wide Tropical African range, extending northward to the White Nile on the east and to Senegal on the west." As regards Godart's description of the underside of the hind wings, it should be observed that his words are "*avec des points marginaux noirâtres*," which means that those markings are very small and blackish—not that they are "black spots" as translated by Mr. Marshall. This is clear from Godart's describing, just before, the corresponding larger markings on the upperside of the hind wings as "*une suite de taches noires*." It would thus appear that in Godart's insect the underside marginal marks were mere blackish dots, and it is reasonable to suppose that the other blackish features—the discal ray and the neurulation—were correspondingly reduced. I may note that in the Mozambique male figured by Hopffer (Peters' Reise Mossamb. t. xxi. figs. 1 & 2), although the discal ray is reduced to some very faint brownish traces and the black neurulation is extremely fine, there are yet three diffuse blackish spots on the nervules along the upper half of the hind margin. As a fact, all the markings in question are highly variable; and it is not more remarkable that Godart should have omitted to mention the discal ray and neurulation if he had a faintly-marked example before him, than it is—supposing, on the other hand, that his type was the Natalian form *T. speciosus*—that he fails to note the costal commencement of the discal ray, which in that form is always well-marked and the most conspicuous marking on the underside.

Godart gives no locality for his *Pieris ione*; but Boisduval—who states (Spéc. Gén., Pref. p. ix, 1836) that he had been able to verify a number of Godart's

38. *TERACOLUS PHLEGYAS*.

*Anthocharis phlegyas*, Butler, Proc. Zool. Soc. p. 431, pl. xxv. fig. 3 (1865).

*Euchloë jalone*, Butler, Cist. Ent. i. p. 14 (1869).

*Teracolus buxtoni*, Butler, Proc. Zool. Soc. p. 130 (1876).

*Teracolus imperator*, Butler, Proc. Zool. Soc. p. 132 (1876).

*Teracolus bacchus*, Butler, Proc. Zool. Soc. p. 73 (1888).

*Teracolus ione*, Reiche, Fér. & Gal. Voy. Abyss. (1849); Felder, Reise Nov. (1865); Trimen, S. Afr. Butt. iii. p. 101 (1889).

*Callosune mrogoroana*, Vuillot, Bull. Soc. Ent. Fr. p. ci (1891).

*Callosune jalone*, var. *natalensis*, Staudinger, Exot. Schmet. p. 44 (1885).

The male type of this highly variable species is a dwarfed specimen from the White Nile, and its most distinctive character is that the underside of the hind wings is white with all the neuration finely blackened throughout. From Wadelai and Njemps I have seen very similarly marked specimens, which are, however, of much larger size, being quite equal to the *T. imperator* form. The only important difference between these examples and *T. bacchus*, Butl., which is recorded from Wadelai, Kandera, and the Sabaki Valley, is that the latter has the underside neuration very heavily blackened, which certainly gives it a very distinct appearance; but the development of the black on neuration is such an eminently unreliable character in this genus that I cannot consider it a good species. *T. mrogoroana* from Zanguebar is identical with *bacchus*, the differences referred to by M. Vuillot appearing to me to be absolutely trivial. *T. phlegyas* also varies in the opposite direction, namely in the gradual loss of the black neuration below until the underside of the hind wing becomes pure white without any markings whatever. Such specimens, however, seem to be rare, as there is nearly always some trace of the oblique dusky discal ray from costa, which is so characteristic of the group. It was on a dry-season specimen of this variety that Mr. Butler founded his *T. jalone*, which has the underside of secondaries of a pinkish tinge with a faint discal ray. This again merges gradually into *T. imperator* (Central East Africa) both in the development of the discal ray and in the tendency to assume a 6th spot in the purple

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descriptions by examination of the actual specimens from which they were made in the Paris Museum—gives Senegal only. As late as 1847 (App. Voy. Deleg. p. 587)—referring to the discovery of *T. ione* in Natal—Boisduval writes: "Avant ce voyage, cette espèce était fort rare dans les collections. Les quelques individus que l'on connaissait avaient été recueillis en Abyssinie ou au Sénégal." *T. speciosus* is by far the most strictly local of the known forms of purple-tipped *Teracoli*, and even in England does not seem to have been received before 1840; and it was not until 1857 that Wallengren described it as distinct from the recognized *T. ione*. On the whole I must still regard it as far more probable that in 1818 Godart had before him one of the widely-ranging tropical forms, and most likely a Senegal specimen, than that he should have been in possession of a form peculiar to the Natal coast, where even the pioneer European elephant-hunters and traders did not go till 1825.—R. TRIMEN.]



apical patch, which is generally present in that species, but is very variable in size and sometimes absent. *T. ione*, Trin. (part), and *T. jalone* var. *natalensis*, Staud., represent the Natal form of the species, which differs from *T. imperator* in its smaller size, the absence of the 6th spot in apical patch, and the rather stronger development of the inner black edging of the purple; but specimens from Mashunaland and the Transvaal show every intergrade between the two forms. In the quasi-tropical coast-belt of Natal another variation occurs, in which the purple patch is slightly reduced owing to the broadening of the inner black edging, and the ends of nervules on the underside of hind wings are strongly blackened, often terminating in spots on the hind margin. *T. burtoni* is the normal dry-season form of the species in South Africa, the Central-African specimens being noticeably larger. Although the males of this species are so variable, the females are even worse and the variations are not so localized. Not only does the ground-colour vary from white to bright yellow, but even the discal black markings are apt to be very much reduced, and the apical patch may be either red or black; in the latter case it contains a row of small spots, which may be either white, yellow, or red. The tints of the underside also vary much, and there seems to be a sporadic tendency to blackening of nervules.

*T. phleggyas* ranges throughout East Africa from Natal to Abyssinia, and in the Southern Tropic it extends westwards to Damaraland and Ovampoland.

#### 39. TERACOLUS REGINA.

*Anthocharis regina*, Trimen, Trans. Ent. Soc. p. 520 (1863).

*Callosune anax*, H. G. Smith, Ann. Mag. N. H. (6) iii. p. 125 (1889).

*Teracolus eliza*, Sharpe, Ann. Mag. N. H. (6) v. p. 441 (1890).

This handsome species, which is wonderfully constant, has not quite such a wide range as *T. phleggyas*. On the eastern side its southern limit seems to be about 28° S. lat., and it has not been recorded north of Victoria Nyanza; from the Transvaal it ranges west through Bechuanaland to Damaraland. The species was founded on dry-season specimens; *T. anax*, with which *T. eliza* is identical, being the wet-season form.

#### 40. TERACOLUS DUCISSA.

*Ptychopteryx? ducissa*, Dognin, Le Natural. p. 132 (1891).

Founded on a single specimen from Zanguebar, apparently the only one recorded. Judging by the description, this must be a very distinct species:—"Breadth 55 mm. Upperside white; apical third of fore wings orange-red, bordered exteriorly with brick-brown, the latter colour extending to inner angle. Underside of hind wings yellowish with reddish striolæ and traversed on disc by a straight, well-defined, reddish-yellow ray." The extension of the hind-marginal border in fore wing is noticeable. The

description comes nearer the dry-season females of *T. phlegyas* (= *buxtoni*), Butl., than anything else, but the complete absence of any black markings along the inner edge of apical patch would at once distinguish it.

#### 41. TERACOLUS ANNÆ.

*Thestias annæ*, Wallengren, K. Sv. Vet.-Akad. Handl.; Lep. Rhop. Caf. p. 66 (1857).

*Anthochuris danaë*, Hewitson (*nec* Fabr.), Gen. Diurn. Lep. pl. vii. fig. 3 (1847); Trimen, Rhop. Afr. Austr. i. p. 44 (1862).

*Teracolus cinerescens*, Butler, Cist. Ent. i. p. 172 (1873).

*Teracolus wallengrenii*, Butler, Proc. Zool. Soc. p. 157 (1876).

*Callosune confusa*, Westwood, Oates' Matabeleland, p. 348 (1889).

This is the Southern representative of *T. eupompe* (Klug), inhabiting the eastern side of South Africa from Natal to Zambesi<sup>1</sup>. *T. cinerescens*, Butl., is quite inseparable from *T. annæ*; and there is nothing to distinguish *T. confusa* (Westw.) from *T. wallengrenii*, Butl., which is the dry-season form of the species.

#### 42. TERACOLUS WALKERI.

*Teracolus walkeri*, Butler, Ann. Mag. N. H. (5) xiv. p. 403 (1884).

The West-African representative of *T. eupompe*, founded on a male and female from Elephant Bay, West Africa. Although from their underside colouring they are clearly dry-season specimens, the inner black edging of apical patch in the male and the basal black clouding in the female are proportionately heavier than in even the wet-season form of *T. annæ* (Wallgr.).

#### 43. TERACOLUS DANAË.

*Papilio danaë*, Fabricius, Syst. Ent. p. 476 (1775).

*Papilio borea* ♀, Cramer, Pap. Exot. iv. pl. 352. figs. E & F (*nec* C & D) (1782).

*Teracolus sanguinalis*, Butler, Proc. Zool. Soc. p. 158 (1876).

*Teracolus taplini*, Swinhoe, Proc. Zool. Soc. p. 444, pl. xl. figs. 8 & 9 (1884).

This is the representative of *T. eupompe* (Klug) in Central and Southern India and Ceylon, corresponding with *T. annæ* (Wallgr.) in S. Africa, to which it has a great resemblance. *T. sanguinalis* and *taplini* represent the dry-season form.

#### 44. TERACOLUS EUPOMPE.

*Pontia eupompe*, Klug, Symb. Phys., Ins. pl. vi. figs. 11-14 (1829).

*Anthopsyche theopompe*, Felder, Reis. Nov., Lep. p. 183 (1865).

*Anthopsyche antepompe*, Felder, Reis. Nov., Lep. p. 184 (1865).

*Anthopsyche dedecora*, Felder, *ibid.* p. 184 (1865).

<sup>1</sup> I have since seen a very large dry-season male, captured by Mr. Crawshaw near L. Nyasa.

*Teracolus pseudacaste*, Butler, Proc. Zool. Soc. p. 156, pl. vi. fig. 11 (1876).

*Teracolus dirus*, Butler, ibid. p. 157, pl. vii. fig. 11 (1876).

*Teracolus dulcis*, Butler, ibid. p. 157, pl. vii. fig. 13 (1876).

*Teracolus eboreoides*, Butler, ibid. p. 158, pl. vii. fig. 12 (1876).

*Teracolus phœnius*, Butler, Ann. Mag. N. H. (4) xviii. p. 488 (1876).

*Teracolus miles*, Butler, ibid. (5) xii. p. 105 (1883).

*Teracolus immaculatus*, Swinhoe, Proc. Zool. Soc. p. 443 (1884).

*Teracolus subroseus*, Swinhoe, ibid. p. 443, pl. xl. figs. 6 & 7 (1884).

*Callosune alberta*, Swinhoe, Ann. Mag. N. H. (6) v. p. 356 (1890).

*Teracolus hildebrandti* ♀, Butler (*nec* Stand.), Proc. Zool. Soc. p. 735 (1895).

After a very careful examination of the fine series of this group in the British Museum, which contains practically all Butler's and Swinhoe's types, I find it impossible to regard any of the above mentioned forms as specifically distinct from *T. eupompe* (Klug). Capt. E. Y. Watson has shown that the Indian forms are inseparable, and he even sinks them all as synonymous with *T. danaë* (Fab.). He may be right in this latter course, but I hardly feel justified in following him at present; and I prefer to regard *T. eupompe* as a distinct, though highly variable species, which ranges from Central Africa through Arabia into N.W. India. The numerous species created by Felder, Swinhoe, and Butler are chiefly based on the relative development of all the black markings and the colour of the underside of secondaries; but as these are highly variable seasonal characters, it is clear that they are useless for differentiating species.

In *Anthopsyche anteupompe*, Feld., from Abyssinia, the White Nile, and Senegal, the black markings above are well developed, but the discal spots on underside of hind wings are obsolete; *T. immaculatus*, Swinh., from Fao and Karachi, is inseparable from this form. The underside spots show a gradually stronger development through typical *T. eupompe* (Klug) (= *dulcis*, Butl., from Karachi) and *T. pseudacaste*, Butl., from the White Nile, Wadelai, and Kilimanjaro (= *dirus*, Butl., and *eboreoides*, Butl., from Karachi), culminating in *T. phœnius*, Butl., and *T. miles*, Butl., which are recorded from Abyssinia southward to Kilimanjaro. Towards the arid deserts of Somaliland this species becomes dwarfed and under-coloured, and there we get the *Anthopsyche theopompe* and *dedecora* of Felder. *T. alberta* and *subroseus* are dry-season forms with pinkish undersides—the former being based on large fully developed examples, and the latter on more or less dwarfed specimens. The well-marked summer specimens show a tendency to the blackening of the nervules on the underside of hind wings: this is carried to a greater extent than usual in a black-and-white female in the British Museum, from Uganda, which has been erroneously attributed to *T. hildebrandti*, Staud., by Mr. Butler.

45. *TERACOLUS HILDEBRANDTI*.

*Callosune hildebrandti*, Staudinger, Exot. Schm. p. 44, pl. xxiii. (1886).

This striking species is very nearly allied to the southern *T. annæ* (Wallgr.), and had I seen only a single specimen I should have regarded it as a sport of that species. But, thanks to Miss E. M. Sharpe, I have been able to examine a fair series of both sexes, and I think there is little doubt that it is entitled to specific rank. In the male the only differences from *T. annæ* are (a) its distinctly larger size, (b) the curious ochreous-yellow colouring of the apical patch, and (c) the inner black edging of apical patch, which is narrow on costa and broadens to hind margin, whereas in *T. annæ* it is practically the same width throughout. The only constant distinction that I can find in the female is the complete absence of any grey clouding along inner margin of fore wings. At present *T. hildebrandti* has only been received from the basin of the Sabaki River, in East Africa, between 2° and 4° S. lat. At Hartley Hills, W. Mashunaland, I caught what at the time I took to be a sport of the dry-season form of *T. annæ* (= *wallengrenii*, Butl.), in which the apical patch was golden yellow; I am unable to refer to the specimen at present, but it may prove to be *hildebrandti*.

46. *TERACOLUS GUENÉE*.

*Anthocharis guenei*, Mabille, Bull. Soc. Ent. Fr. p. 38 (1877), and Grand. Hist. Madag., Lép. i. p. 298, pl. xl. figs. 7-9 (1887).

The small size of the apical patch and its strong sinuation on the inner edge give this species almost the appearance of a dwarfed specimen of *T. theogone*, Boisd., on the upperside, but the discal spots below show its relationship to the *T. eupompe* group. The small variety mentioned by M. Mabille is clearly the dry-season form. It is peculiar to Madagascar.

47. *TERACOLUS SIGA*.

*Anthocharis siga*, Mabille, Le Naturaliste, p. 100 (1882), and Grand. Hist. Madag., Lép. i. pl. xli. fig. 4 (1887).

This species was founded by M. Mabille on a single male from Madagascar. From the figure it looks suspiciously like a dwarfed specimen of *T. guenei*, in which the underside markings have failed as happens in *T. eupompe*; but until further examples are forthcoming it is perhaps advisable to keep it separate.

48. *TERACOLUS EULIMENE*.

*Pontia eulimene*, Klug, Symb. Phys., Ins. pl. vii. figs. 5-8 (1829).

A most distinct species with no very near allies. Mr. Butler refers it to the genus *Ixias*, but it seems preferable to retain it as a *Teracolus*. Recorded from Dongola and the White Nile.



## 49. TERACOLUS EPHYIA.

*Pontia ephyia*, Klug, Symb. Phys., Ins. pl. vi. figs. 9 & 10 (1829).

*Anthopsyche demagore*, Felder, Reis. Nov., Lep. ii. p. 186 (1865).

The females associated with *T. ephyia* in the British Museum appear to me to be wrongly placed, as they are inseparable from those of the very different *T. microcale*, Butl. *T. demagore*, with its reduced black markings above and pinkish underside, I take to be the dry-season form of this species. Recorded from Dongola and Upper Egypt.

## 50. TERACOLUS LIAGORE.

*Pontia liagore*, Klug, Symb. Phys., Ins. pl. vi. figs. 5-8 (1829).

This distinct little species, which belongs to the *T. evarne* group, seems to be decidedly scarce. Klug records a single male from Dongola, there is a male from Upper Egypt in the British Museum, and I have seen one other from Suakin.

## 51. TERACOLUS AUXO.

*Anthocaris auxo*, Lucas, Rev. Zool. p. 422 (1852).

*Anthocaris evarne*, Boisduval (*nec* Klug), App. Voy. Deleg. p. 587 (1847).

*Anthopsyche evarne*, Wallengren, K. Sv. Vet.-Akad. Handl.; Lep. Rhop. Caf. p. 14 (1857).

*Anthopsyche eucharis*, ? var., Wallengren, *ibid.*; *ibid.* p. 15 (1857).

*Anthopsyche topha*, Wallengren, Wien. ent. Monats. p. 34 (1860).

*Anthopsyche keiskamma*, Trimen, Rhop. Afr. Aust. p. 56, pl. ii. figs. 2 & 3 (1866).

*Teracolus syrtinus*, Butler, Proc. Zool. Soc. p. 163 (1876).

*T. auxo* represents the wet-season form, and *T. topha* (= *keiskamma*) the dry. As Mr. Trimen has pointed out, the two types of *T. syrtinus*, Butl., from Lake Nyasa and Senegal, are inseparable from *T. auxo*; but the remaining specimens associated with them in the British Museum appear to me to be referable to the nearly allied *T. evarne* (Klug). The above specimens of *P. syrtinus* are the only examples of true *T. auxo* that I have seen from localities north of the Zambesi. To the south of that river it is plentiful in suitable spots throughout the eastern side of the continent.

## 52. TERACOLUS INCRETUS.

*Teracolus incretus*, Butler, Ent. Mo. Mag. xviii. p. 146 (1881).

*Callosune vulnerata*, Staudinger, Exot. Schm. pl. xxiii. (1884).

This handsome species is the Central-African representative of *auxo*, and inhabits a broad belt of country lying between Mombasa and Victoria Nyanza. It has the bright yellow colouring of the Southern species, as opposed to the whiter tints of *T. evarne* (Klug); but differs in its much larger size and in the black markings on primaries, there being no sign of black on the inner edge of apical patch, and the hind marginal border being narrow, not extended to posterior angle nor dilated as in *T. auxo*. In the latter characters

it approaches nearer *T. evarne*. *T. vulnerata*, Staud., is clearly the dry-season form of the same species.

### 53. TERACOLUS EVARNE.

*Pontia evarne*, Klug, Symb. Phys., Ins. pl. vi. figs. 1-4 (1829).

*Teracolus citreus*, Butler, Proc. Zool. Soc. p. 162 (1876).

*Teracolus xanthevarne*, Butler, Proc. Zool. Soc. p. 163 (1876).

*Teracolus philipsii*, Butler, Proc. Zool. Soc. p. 772, pl. xlvii. fig. 11 (1885).

This is the northernmost African species in this group, being recorded from Upper Egypt, Abyssinia, and Somaliland, southward to Kilimanjaro. *T. xanthevarne* represents the fullest development of the wet-season form, and approaches *T. incertus*; typical *T. evarne* is a little less strongly marked; the specimens placed with *T. syrtinus* in the British Museum constitute an exactly intermediate seasonal form; and *T. citreus* is the full dry-season form. *T. philipsii* is founded on dwarfed specimens from the Somali deserts, and, as is always the case in such instances, it shows an unbroken gradation into the typical form.

Apart from other characters, *T. evarne* seems to differ constantly from *T. auro* and *incertus* in the more rounded shape of the fore wings at all seasons of the year.

### 54. TERACOLUS ECHARIS.

*Papilio eucharis*, Fabricius, Syst. Ent. p. 472 (1775).

*Papilio aurora*, Cramer, Pap. Exot. iv. pl. 299. figs. A & D (1782).

*Papilio ceneos*, Hübner, Verz. b. Schmett. p. 94 (1816).

*Pieris titea*, Godart, Enc. Méth. ix. p. 124 (1819).

*Teracolus pseudervanthe*, Butler, Proc. Zool. Soc. p. 164, pl. vii. fig. 16 (1876).

*Teracolus pallens*, Moore, Ann. Mag. N. H. (4) xx. p. 49 (1877).

*T. pseudervanthe* exhibits the strongly marked wet-season coloration; *T. aurora* and *titea* are intermediates; and *T. eucharis* and *pallens* are the dry-season form, the latter showing a very close relationship to *T. evarne* (Klug). This species frequents Central and Southern India and Ceylon.

### 55. TERACOLUS EVANTHE.

*Anthocaris evanthe*, Boisduval, Spec. Gén. Lép. i. p. 567 (1836).

*Anthocaris ena*, Mabille, Bull. Soc. Philom. p. 134 (1879), and Grand. Hist. Madag. pl. xl. fig. 6 (1887).

A curious species, linking the *T. evarne* and *evippe* groups; peculiar to Madagascar. *T. ena* does not seem to present any characters entitling it to specific rank.

### 56. TERACOLUS ETRIDA.

*Anthocaris etrida*, Boisduval, Sp. Gén. Lép. i. p. 576 (1836).

*Teracolus limbatus*, Butler, Proc. Zool. Soc. p. 161 (1867).

*Teracolus farsinus*, Butler, ibid. p. 159, pl. vii. fig. 1 (1876).



- Teracolus pernotatus*, Butler, *ibid.* p. 159, pl. vii. fig. 2 (1876).  
*Teracolus purus*, Butler, *ibid.* p. 160, pl. vii. figs. 14 & 15 (1876).  
*Teracolus bimbura*, Butler, *ibid.* p. 161, pl. vii. figs. 3 & 4 (1876).  
*Teracolus casimirus*, Butler, *ibid.* p. 161 (1876).

Dr. Butler has here, as elsewhere, founded his many species on characters which are subject to seasonal variation, and they therefore merge imperceptibly into one another. The most heavily-marked form is *T. limbatus*, from Ceylon and Southern India, but the slightly broader border in secondaries is, in my opinion, much too unstable to be regarded as a specific distinction. *T. bimbura* represents the normal dry-season colouring. *T. etrida* is the Asiatic representative of *T. evippe*, and appears to range practically throughout India and Ceylon, and there is one specimen in the British Museum from Fao.

#### 57. TERACOLUS EVIPPE.

- Papilio evippe*, Linnæus, *Mus. Lud. Utr.* p. 239 (1764).  
*Papilio arethusa*, Drury, *Ill. Exot. Ent.* ii. pl. 19. figs. 5 & 6 (1773).  
*Papilio eborea*, Cramer, *Pap. Exot.* iv. pl. 352. figs. C & D [nec E & F] (1782).  
*Papilio hanna*, Herbst, *Naturs. Schmett.* v. p. 177, pl. 107. figs. 5 & 6 (1792).  
*Pieris omphale*, Godart, *Enc. Méth.* ix. p. 122 (1819).  
*Pieris amyntis*, Godart, *ibid.* p. 123 (1819).  
*Anthocharis achine*, Boisduval (*nec* Cram.), *Spec. Gén. Lép.* i. p. 574 (1836).  
*Anthocharis theogone*, Boisduval, *ibid.* p. 575 (1836).  
*Anthocharis cebrene*, Boisduval, *ibid.* p. 583 (1836).  
*Anthocharis ocale*, Boisduval, *ibid.* p. 584 (1836).  
*Anthocharis exole*, Reiche, *Fér. & Gal. Voy. Abyss.* pl. xxxi. fig. 4 [nec 5 & 6] (1849).  
*Anthocharis eurygone*, Lucas, *Rev. Zool.* p. 341 (1852).  
*Anthopsyche procne*, Wallengren, *K. Sv. Vet.-Akad. Handl. ; Lep. Rhop. Caf.* p. 323 (1857).  
*Anthopsyche epigone*, Felder, *Reise Nov.*, *Lep.* p. 186 (1865).  
*Anthopsyche acte*, Felder, *ibid.* p. 187 (1865).  
*Teracolus loandicus*, Butler, *Proc. Zool. Soc.* p. 724 (1871).  
*Teracolus omphaloides*, Butler, *ibid.* p. 151 (1876).  
*Teracolus hybridus*, Butler, *ibid.* p. 152 (1876).  
*Teracolus delphine*, Butler (*nec* Boisd.), *ibid.* p. 152 (1876).  
*Teracolus angolensis*, Butler, *ibid.* p. 154 (1876).  
*Teracolus pseudocale*, Butler, *ibid.* p. 154, pl. vi. fig. 9 (1876).  
*Teracolus corda*, Möschler, *Verh. zool.-bot. Ver. Wien*, xxxiii. p. 223 (1883).  
*Teracolus complexivus*, Butler, *Proc. Zool. Soc.* p. 770 (1885).  
*Teracolus pyrrhopterus*, Butler, *ibid.* p. 575, pl. xxxvi. figs. 8 & 9 (1894).

The inclusion of the East-African *T. omphale*, with its many variations, as a synonym of the West African *T. evippe* will

doubtless seem to many at first sight to be unwarranted, but after a careful study of a large number of insects, including many type-specimens, I can arrive at no other conclusion. Speaking roughly, the position is as follows:—On the eastern side of the Continent we have *T. omphale*, with its heavy black bars in both wings, during the wet season, which is replaced during the winter by its dry-season form *T. theogone*, in which the black bars disappear more or less completely; the black borders are much reduced, and the underside of secondaries becomes speckled with grey hatching, with a darker transverse bar on disc. But, as so often happens in such cases of seasonal dimorphism, at the change of seasons specimens are met with uniting the characteristics of both wet- and dry-season forms. Some such examples were caught by the late Mr. E. C. Buxton in Natal and Swaziland, which resemble *T. theogone* in their shape and in the absence of the black bars, but have the border of the apical patch as in *T. omphale*, and the underside is white, without trace of grey hatching. These were referred, and I think justifiably, to *T. evippe* by Mr. Trimen (= *pseudocale*, Butl.), who at that time regarded *T. omphale* and *theogone* as distinct species. In Eastern Africa, therefore, we have *T. evippe* as an intermediate seasonal form of *T. theogone-omphale*, and this is probably also the case in Angola, on the West Coast; but when we reach Guinea and Sierra Leone *T. evippe* is the predominating form, and the extremes are apparently very scarce, or even absent, this being perhaps due to a greater uniformity of general conditions, which might tend to produce a mean or intermediate form. The question then arises whether *T. evippe* is specifically distinct from *T. omphale*. Personally I think not, but I regard it as a local development or variation of that species, which still exhibits a series of gradations linking it to the parent form. Then by the law of priority *evippe* must stand as the name of the species, and *T. omphale* be ranked as a local variety.

*T. omphale*, as defined by Trimen (S. Afr. But.), ranges practically throughout Africa, south of the Equator; to the north of this it is only recorded from Senegambia (Hope Coll., Oxford) and Abyssinia, and appears to be very scarce all along the West Coast.

*T. hybridus* is another example of intermediate seasonal coloration, resembling the summer *T. omphale* above and the winter *T. theogone* below; the type is from Plettenberg Bay, Cape Colony.

*T. complexivus* (Delagoa Bay and Somaliland), *omphaloides* (Natal, Zululand, Swaziland, Transvaal, and Kilimanjaro), and *corda* (Swaziland) are also intermediate, but nearer the dry-season form than *T. hybridus*, as they have the upperside black markings more reduced, the black bar in hind wings being usually obsolescent and often absent. In the latter case they constitute the *Anthocharis theogone* var. B of Boisduval.

*T. epigone*, from Zomba, the White Nile, and Arabia, is inseparable from *T. theogone*. The single female in the British Museum from Arabia is of interest, having lost all the discal black markings (probably as a result of the arid climate), and thus represents an extreme example of local dry-season coloration.

*T. pyrrhopterus*, from British East Africa, cannot be separate from *T. omphale-theogone*, for the curiously dark pink of the under-side of secondaries cannot be regarded as a specific character, as the tints of that part are highly variable in the dry season, and are probably more or less influenced by the colouring of the soil.

*T. loandicus*, from Angola, and *proene*, from Swaziland and Orange River, are quite alike, and represent the small, lightly-marked variety of *T. theogone*, which prevails in dry localities and in the higher plateaux of the interior.

*T. delphine*, Butl. (*nec* Boisd.), is represented in the British Museum by six examples—two males and one female from S. Africa, and three males from the Niger. The males are interesting, as they exhibit the gradual gradation of colouring from *T. theogone* to typical *T. evippe* on the upperside, and although they are white beneath they show more or less faintly the dusky discal bar in hind wings so characteristic of *T. theogone*.

*T. angolensis*, from Angola and the Congo, is similar to the preceding, but has quite lost the dusky bar beneath, and closely resembles typical *T. evippe*, though the apical patch is more like that of *T. theogone*.

*T. pseudocale* is recorded from Swaziland, and, as I have stated above, I can only regard it as an intermediate seasonal form of the variety *T. omphale*, though at the same time it is quite similar to *T. angolensis*.

The female is somewhat like a dwarfed *T. theogone*, but shows an approach to *T. evippe* in its reduced discal black markings.

*T. ocale* is only a larger form of *T. pseudocale*, and although the single female in the British Museum generally resembles that of *T. evippe*, yet it has the distinct red apical band of the var. *omphale*.

*T. arethusa*, *eborea*, *hanna*, *amytis*, and *cebrene* are all referable to typical *T. evippe* (Linn.).

#### 58. TERACOLUS SUFFUSUS.

*Teracolus suffusus*, Butler, Proc. Zool. Soc. p. 152, pl. vi. fig. 10 (1876).

This little species is founded on a single female from Angola, which looks not unlike a dwarf specimen of *T. evippe-omphale*, but the basal black in fore wing extends from inner margin to costa, and continues outwardly almost to the extremity of the discoidal cell. I cannot attribute it to any described male.

#### 59. TERACOLUS MICROCALE.

*Teracolus microcale*, Butler, Ann. Mag. N. H. (4) xviii. p. 487 (1876).

This species is only recorded from Abyssinia in the north-east, and the Orange River in the south-west. It looks very much as if it were only a dwarfed and under-coloured local variation of *T. evippe*, and the localities in which it occurs lend some colour to this view. However, in view of the paucity of specimens it seems

advisable to keep it separate for the present. Two females in the British Museum attributed to *Pontia ephyia*, Klug, seem to me to belong to this species.

#### 60. TERACOLUS INFUMATUS.

*Teracolus infumatus*, Butler, Proc. Zool. Soc. p. 128 (1896).

This is a very distinct little species, of which there are two males and two females in the British Museum, from Lake Tanganyika and Lake Nyasa. The general pattern of the black markings in the male is not unlike that of a very heavily-marked *T. achine* (Cram.), but the apical patch is distinctly of the *T. evippe* type. The female is very like that of the latter insect, but exhibits some of the characters of *T. achine*<sup>1</sup>.

#### 61. TERACOLUS HALYATTES.

*Teracolus halyattes*, Butler, Proc. Zool. Soc. p. 145, pl. vi. fig. 7 (1876).

This little species is at present known only from N.E. Natal and the Transvaal, but it seems to be very scarce, and only dry-season specimens have been captured. It combines several characters of the dry forms of *T. achine* (Cram.) and *T. evippe-omphale*, but is nearer the former. The females in the British Museum, which appear to have been selected by guesswork, are quite similar to those of *T. achine* (dry).

#### 62. TERACOLUS ACHINE.

*Papilio achine*, Cramer, Pap. Exot. iv. pl. 338. figs. E, F (1782).

*Anthocharis antevippe*, Boisduval, Sp. Gén. Léop. i. p. 572 (1836).

*Anthocharis nr. achine*, Angas, Kaf. Ill. pl. xxx. figs. 4, 5 (1849).

*Anthocharis exole*, ♀ (nec ♂), Reiche, Férr. & Gal. Voy. Abyss. pl. xxxi. figs. 5, 6 (1849).

*Anthocharis zera*, Lucas, Rev. Zool. p. 423 (1852).

*Anthocharis isaura*, Lucas, ibid. p. 424 (1852).

*Anthopsyche omphale*, ♀, Wallengren, K. Sv. Vet.-Akad. Handl.; Lep. Rhop. Caf. p. 11 (1857).

*Anthopsyche gavis*, Wallengren, ibid. p. 13 (1857).

*Anthopsyche roxane*, Felder, Reise Nov., Lep. p. 187 (1865).

*Teracolus harmonides*, Butler, Proc. Zool. Soc. p. 146 (1876).

*Teracolus ithomus*, Butler, ibid. pl. vi. fig. 7 (1876).

*Teracolus hippocrene*, Butler, ibid. p. 147 (1876).

*Teracolus ignifer*, Butler, ibid. p. 147 (1876).

*Teracolus simplex*, Butler, ibid. p. 148 (1876).

*Teracolus helle*, Butler, ibid. p. 149 (1876).

*Teracolus hyperides*, Butler, ibid. p. 149 (1876).

*Teracolus trimeni*, Butler, ibid. p. 150 (1876).

<sup>1</sup> I have since seen a male in Miss Sharpe's collection which has the inner marginal black bar and the border of hind wing a good deal reduced, thus approaching very near *T. evippe*, with which it may prove identical.



*Teracolus hero*, Butler, p. 150, pl. vi. fig. 12 (1876).

*Callosune damarensis*, Aurivillius, K. Sv. Vet.-Akad. Förhandl. p. 46 (1879).

*Teracolus carteri*, Butler, Ent. Mo. Mag. xviii. p. 227 (1882).

*Teracolus subvenosus*, Butler, Ann. Mag. N. H. (5) xii. p. 105 (1883).

*Callosune haevernicksi*, Staudinger, Exot. Schm. pl. xxiii. fig. 19 (1884).

*Teracolus fumidus*, Swinhoe, Proc. Zool. Soc. p. 442, pl. xl. figs. 4, 5 (1884).

*Teracolus sipylus*, ♀ (nec ♂), Swinhoe, ibid. p. 445, pl. xl. fig. 12 (1884).

*Teracolus laura*, E. M. Sharpe, Ann. Mag. N. H. (6) v. p. 441 (1890).

This species occurs practically throughout South and Central Africa as far north as Senegal on the west, and Abyssinia on the east side. It exhibits very strong seasonal dimorphism and slight local variation, and has consequently been much split up.

In South Africa typical *T. achine* is the wet form, the normal dry form being *T. ignifer*, Butl. (= *antevippe*, Trim. [nec Boisd.]), and this type of seasonal coloration probably holds good throughout the greater part of its range; but in the equatorial forest-belt it is possible that the dry-season form is represented by the *T. antevippe* of Boisduval, which differs from that of Trimen in having the underside of hind wings pure white and without any grey irroration. Specimens of this variation occur occasionally in S. Africa as intermediate seasonal forms; but it does not appear to establish itself until near the Equator, and this offers a somewhat interesting parallel to the case of *T. evippe*, referred to above. I append a few notes on the variations of *T. achine* which have been honoured with specific names.

*T. harmonides* (Swaziland), *ithonus* (Swaziland), and *haevernickii* (Transvaal) are all specimens of the normal S.-African winter form (= *ignifer*, Butl.), being differentiated on slight variation of unstable seasonal markings. *T. simplex* represents the extreme dry-season form, in which almost every trace of the black markings above has disappeared; it occurs on the inland plateaux of S. Africa, and I have taken it sparingly in the Transvaal and Mashunaland, finding at the same time every gradation into the normal dry form of *T. achine*, the females being quite indistinguishable. The single specimen in the British Museum is ticketed "Durban, Natal," but I very much doubt the accuracy of the record. *T. damarensis*, from Damaraland and Swaziland, is identical with this form. *T. hippocrene* is founded on dry-season specimens in which the underside irroration has become obsolescent, thus showing an approach to the summer form. *T. zera*, from Abyssinia, Mt. Kenia, V. Nyanza, and Zululand, is an interesting intermediate form in which the black borders of the upperside are almost as well marked as in lighter specimens of typical *T. achine*, and occasionally there is the faintest suspicion of the inner mar-

ginal black bars, while on the underside the pink tinge is much fainter than in the full winter form, and the irroration is very sparse. *T. hyperides*, from Swaziland and V. Nyanza, is a step further in the development of the wet-season colouring, having the black inner marginal stripe more distinct and the underside of hind wings being white; this, again, merges through *T. hero* into typical *T. achine*. The series of specimens included under *T. sub-venosus* in the British Museum is an eloquent proof of the difficulty experienced by Mr. Butler himself in discriminating his own species, for they are in truth a "job lot." The species was founded on a specimen of *T. achine*, which is rather lightly marked above, and has the underside of hind wings white, with the neuration finely black throughout. But the present series shows every development of the upperside black markings, so that some specimens have a strong inner marginal band, while others have none, in spite of the fact that Mr. Butler has founded species on the relative development of this very character. The undersides are equally variable, ranging from the type with black neuration to a specimen in which there is no trace of black, but which is exactly similar to the type on its upperside, thus showing the complete inutility of black neuration as a specific character. *T. trimeni* I cannot distinguish from typical *T. achine*. *T. gavis* represents the fullest wet-season development of this species, in which all the black markings above and below are strongly developed, and it occurs in suitable localities from Abyssinia to Natal; that is to say, in a moist and wet climate *T. gavis* would probably represent the wet-season form of the species, whereas in a drier and cooler place it would be *T. achine*. For instance, the former is prevalent in the quasi-tropical coast-belt of Natal, but as we go further inland towards the plateaux both forms occur and every intergrade between them, until finally *T. achine* predominates. *T. laura*, from Central East Africa, is a variation of *T. gavis*, in which the inner marginal black bars are very faint, or even absent; *T. carteri*, founded on a single female from Accra, being evidently the same form, of which I have seen every gradation through *T. helle* to *antevippe* (Boisd.). The tendency of several species of *Teracolus* on approaching the equatorial belt to lose their discal black markings is very curious and interesting. The only noteworthy distinction in *T. fumidus*, Swinh., from the Transvaal, is the trace of a transverse black bar on upperside of hind wings, a very variable character, not unfrequently appearing more or less faintly in specimens of *T. achine*, but never well developed.

### 63. *TERACOLUS LAIS*.

*Teracolus lais*, Butler, Proc. Zool. Soc. p. 145 (1876).

This is a distinct little species of the *T. achine* group from S.W. Africa, and may be distinguished from its allies by the small, very oblique, orange, apical patch, which has a distinct border of black along its inner edge. I have only seen dry-season specimens.

## 64. TERACOLUS EVENINA.

*Anthopsyche evenina*, Wallengren, K. Sv. Vet.-Akad. Handl.; Lep. Rhop. Caf. p. 12 (1857).

*Anthopsyche deidamia*, Wallengren, Wien. ent. Monats. p. 35 (1860).

*Callosune casta*, Gerstäcker, Arch. f. Nat. xxxvii. p. 357 (1871).

*Callosune deidamioides*, Aurivillius, K. Sv. Vet.-Akad. Förhandl. p. 45 (1879).

*Callosune inornata*, Westwood, App. Oates' Mat. Ld. ed. i. p. 338 (1881).

*Teracolus sipylus*, ♂ (*nec* ♀), Swinhoe, Proc. Zool. Soc. p. 444, pl. xl. fig. 11 (1884).

*Teracolus callidia*, H. G. Smith, Ent. Mo. Mag. xxiii. p. 32 (1886).

This species extends practically throughout the S.-African sub-region except in the neighbourhood of Natal and Zululand. On the western side it is not recorded further north than Damara-land, but on the east it extends to Somaliland. *T. sipylus* (= *callidia*) is the extreme development of the wet form, and *T. deidamioides* represents the dry-season brood. The type of *T. inornata* is a very lightly-marked dry-season male. *T. casta* probably represents the dry-season form in the moister parts of Central Africa, having a dry-season upperside combined with a white underside, the ends of nervules being occasionally blackened in the latter part. *T. evenina* varies extremely in size in accordance with the dryness or humidity of the localities it frequents, some males from Namaqualand in Mr. Trimen's collection being hardly larger than typical *T. evagore* (Klug).

## 65. TERACOLUS CINCTUS.

*Teracolus cinctus*, Butler, Ann. Mag. N. H. (5) xii. p. 105 (1883).

The two males in the British Museum from Victoria Nyanza present much affinity to *T. pallene* (Hopff.), but with my present available material I must regard them as distinct<sup>1</sup>. *T. cinctus* forms an interesting link between the *T. achine* and *evagore* groups.

## 66. TERACOLUS YERBURII.

*Teracolus yerburii*, Swinhoe, Proc. Zool. Soc. p. 441, pl. xxxix. fig. 12 (1884).

*Teracolus swinhoei*, Butler, *ibid.* p. 491 (1884).

A purely Arabian species, being the representative there of the African *T. दौरα*. *T. swinhoei* is founded on a single female from Arabia, which is clearly only a yellow variety of *T. yerburii*.

<sup>1</sup> "Among Mr. Millar's *Teracoli* I found two males of *T. pallene* (Hopff.), which he had caught in Natal. In my paper I kept *T. cinctus*, Butl., distinct from that species; but I now think I was wrong in doing so, and that it should fall as a synonym of *T. pallene*." [See No. 70, *infra*].—G. A. K. Marshall, *in epist.*, 20th August, 1896.

67. *TERACOLUS DALILA*.

*Anthopsyche dalila*, Felder, Reise Nov., Lep. p. 188 (1865).

I have not seen a specimen of this species, which is recorded from Bogos in East Africa. Judging by the description it may prove to be identical with *T. दौरا*.

68. *TERACOLUS DAIRA*.

*Pontia दौरا*, Klug, Symb. Phys., Ins. pl. viii. figs. 1-4 (1829).

*Teracolus xanthus*, Swinhoe, ♀ (*nec* ♂), Proc. Zool. Soc. p. 440, pl. 39. fig. 11 (1884).

*Teracolus odysseus*, Swinhoe, ♂ (*nec* ♀), *ibid.* p. 441, pl. 40. fig. 3 (1884).

A North-east African species, being recorded from Dongola and Somaliland; the male seems to hold an intermediate position between *T. yerburii* and *thruppii*, but the female is very distinct from that of any other species. In defining *T. xanthus* and *odysseus* Col. Swinhoe has undoubtedly confused the sexes of two species, for the male *T. odysseus* clearly belongs to the female *T. xanthus*, and in my opinion they constitute the dry-season form of *T. दौरा*. Moreover, the male *T. xanthus* and the female *odysseus* are referable to one species, viz., the variable *T. evagore* (Klug).

69. *TERACOLUS THRUPPII*.

*Teracolus thruppii*, Butler, Proc. Zool. Soc. p. 770, pl. 47. fig. 10 (1885).

*Teracolus jacksoni*, E. M. Sharpe, Ann. Mag. N. H. (6) v. p. 336 (1890).

Recorded from Somaliland and British East Africa. I cannot see sufficient grounds for separating *T. jacksoni* from this species.

70. *TERACOLUS PALLENE*.

*Anthocharis pallene*, Hopffer, Peters' Reis. Mossamb. Ins. p. 358, pl. 23. figs. 7 & 8 (1862).

This species differs chiefly from the following in having a continuous black border along inner edge of apical patch at all seasons. Hopffer's type is from Tette, and I have seen specimens from Nyasaland, Namaqualand, and S. Matabeleland.

71. *TERACOLUS EVAGORE*.

*Pontia evagore*, Klug, Symb. Phys., Ins. pl. viii. figs. 5 & 6 (1829).

*Anthocharis antigone*, Boisduval, Sp. Gén. Lép. i. p. 572 (1836).

*Anthocharis phlegetonia*, Boisduval, *ibid.* p. 576 (1836).

*Anthocharis delphine*, Boisduval, *ibid.* p. 577 (1836).

*Anthocharis cione*, Boisduval, *ibid.* p. 578 (1836).

*Anthocharis nouna*, Lucas, Expl. Alg., Zool. iii. p. 350, pl. i. fig. 2 (1849).

*Anthopsyche eucharis*, Wallengren (*nec* Fabr.), K. Sv. Vet.-Akad. Handl.; Lep. Rhop. Caf. p. 15 (1857).



*Anthopsyche heuglini*, Felder, Wien. ent. Monats. iii. p. 272 (1859).

*Anthopsyche stygia*, Felder, Reis. d. Nov., Lep. p. 188 (1865).

*Teracolus interruptus*, Butler, Proc. Zool. Soc. p. 724 (1871).

*Teracolus subfumosus*, Butler, ibid. p. 139, pl. vi. fig. 3 (1876).

*Teracolus flaminia*, Butler, ibid. p. 140 (1876).

*Teracolus lycoris*, Butler, ibid. p. 140, pl. vi. fig. 1 (1876).

*Teracolus lyceus*, Butler, ibid. p. 141, pl. vi. fig. 2 (1876).

*Teracolus friga*, Butler, ibid. p. 142 (1876).

*Teracolus galathinus*, Butler, ibid. p. 142 (1876).

*Teracolus gelasinus*, Butler, ibid. p. 143 (1876).

*Teracolus lucullus*, Butler, ibid. p. 143, pl. vi. fig. 4 (1876).

*Teracolus glycera*, Butler, ibid. p. 144 (1876).

*Callosune pseudetrida*, Westwood, App. Oates' Mat. Ld. ed. i. p. 340 (1881).

*Callosune ramaquebana*, Westwood, App. Oates' Mat. Ld. p. 341, pl. E. figs. 5 & 6 (1881).

*Teracolus minans*, Butler, Ent. Mo. Mag. xviii. p. 229 (1882).

*Teracolus coniger*, Butler, ibid. xviii. p. 229 (1882).

*Teracolus xanthus*, Swinhoe, ♂ (*nec* ♀), Proc. Zool. Soc. p. 440, pl. xxxix. fig. 10 (1884).

*Teracolus odysseus*, Swinhoe, ♀ (*nec* ♂), ibid. p. 441 (1884).

*Teracolus saveus*, Swinhoe, ibid. p. 441, pl. xl. figs. 1 & 2 (1884).

*Teracolus jamesi*, Butler, ibid. p. 771 (1885).

*Teracolus comptus*, Butler, ibid. p. 94 (1888).

*Teracolus bifasciatus*, E. M. Sharpe, Ann. Mag. N. H. (6) v. p. 336 (1890).

*Teracolus cmini*, Butler, ibid. (6) vii. p. 47 (1891).

This widespread little species is certainly the most variable of all the *Teracoli*, as is well shown by the above lengthy list of synonyms. In May 1893 I found the dry-season form of this species very plentiful in the Northern Transvaal, and they there exhibited much greater variation than in either Natal or Mashunaland, more especially the females, which presented a wonderful variety of coloration. Most of these forms have been raised to specific rank by Mr. Butler, but he has based his species chiefly on the relative development of the variable seasonal black markings in the male. We thus get a graduated series from the lightly-marked *T. subfumosus*, through *T. lycoris*, *flaminia*, *friga*, *lyceus*, *ramaquebana*, to *galathinus*, in which the upperside markings approach to those of the wet-season form of the species, represented by *T. phlegetonia* (Boisd.). All these forms exhibit the tinted and irrorated underside colouring, which in South Africa, at all events, is always characteristic of the dry-season form. I have, however, seen very few specimens of this type from Central Africa, and these appear to have been captured in the dry belt of country referred to by Mr. Scott Elliot in his interesting book on that region. It is therefore possible that in the more humid and forest-clad areas the dry-season form may be represented by *T. antigone* (Boisd.), which differs from South-African specimens in having

a pure white underside, and here, too, we can find every gradation of colouring linking it to *T. phlegetonia*. But I can find no sufficient reason for separating *T. nouna* (Luc.) from *antigone*, the only difference being that the black borders are reduced and the variable inner marginal bar and the black spot on inner edge of apical patch, both of which are evanescent in *T. antigone*, have quite disappeared in *nouna*. The latter, again, seems to me identical with *T. jamesi*, Butl., *heuglini* (Feld.), and *evagore* (Klug). In the arid climate of Arabia *T. evagore* appears to be the normal wet-season form, the dry-season form being probably *T. saveus*, Swinh., which only differs in having a pink underside. Of the two specimens of *T. gelasinus* in the British Museum, one has the underside pure white while the other is sparsely irrorated with grey; on the upperside of fore wings they have no inner marginal bar, but the spot on inner edge of patch is distinct. They thus form an interesting link between *T. antigone* and the southern dry form, being also intermediate in locality, as they come from Angola. With regard to some of the other variations which have been described as species: *T. minans* is a variable form ranging across the Continent in Central Africa; it is white below, and the upperside markings show practically every gradation from *T. evagore* to *phlegetonia*. *T. comptus*, from Kilimanjaro, has the transverse bar narrow and sometimes very faint, the spot in apical patch ill-defined, and the marginal spots in hind wing separate but distinct. *T. coniger*, from the West Coast (Accra), is very similar, but has the transverse bar a little stronger and the nervular spots in hind wing larger and triangular in shape. *T. glycera* is founded on a single male of *T. minans* (labelled ? Africa), which while retaining the inner marginal bar has lost the black spot in patch; the border in hind wings is broad and somewhat diffuse inwardly. *T. bifasciata* I cannot distinguish from *T. minans*, and, as I have noted above, the male of Col. Swinhoe's *T. xanthus* and the female of *T. odyseus* are clearly attributable to this form. *T. interruptus*, from Angola and S.W. Africa, much resembles *T. comptus*, but has the spot in apical patch better defined and the nervular spots in hind wing are united into a broad border. *T. lucullus*, from Angola and V. Nyanza, are only lightly marked specimens of *T. phlegetonia* and *T. emini* is founded on a single male from Central Africa, in which the black borders are a little deeper than in typical *T. phlegetonia*.

## 72. *TERACOLUS NIVEUS*.

*Teracolus niveus*, Butler, Proc. Zool. Soc. p. 177, pl. xviii. fig. 1 (1881).

*Teracolus candidus*, Butler, ibid. p. 178, pl. xviii. fig. 2 (1881).

An insular form of *T. evagore*, confined to the island of Socotra. It is a variable species, showing a strong tendency to lose the red apical patch, and the more extreme examples in this direction have been separated by Mr. Butler under the name *T. candidus*, but without sufficient justification, I think.







2. On the Deer allied to *Cervus sica*.

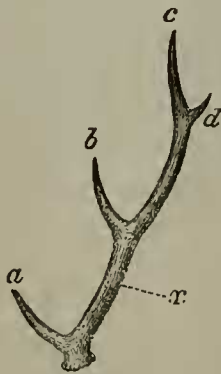
By R. LYDEKKER, B.A., F.R.S., F.Z.S., &amp;c.

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(Plate I.)

In the last paper that I had the honour of presenting to the Society attention was directed to the very imperfect state of our knowledge regarding the members of the typical group of the genus *Cervus*. In the present communication I propose to show that the prettily-coloured Deer constituting the Pseudaxine<sup>1</sup> group of the same genus are in a still more hopeless state of confusion as regards the delimitation of species. Indeed, these Deer, both by describers and systematists, have been treated badly from a zoological point of view. At the present time the group is represented by a remarkably fine series in the Menagerie at Woburn Abbey; and—thanks to the Duke and Duchess of Bedford—these have afforded me the means of endeavouring to clear up the confusion.

In his paper on the classification of the *Cervidæ*, published in the Society's 'Proceedings' for 1878, the late Sir Victor Brooke gave the following definition of the subgenus *Pseudaxis*<sup>2</sup>:—"Antlers about twice the length of the head, supported on short stout pedestals. Brow-antler (*a*) rather short, directed upwards at a rather acute angle with the beam (*x*). A strong tine (*b*) is

Antler of *Cervus sica*.

developed from the anterior surface of the antler at about half its entire length, and a short tine (*d*) from the posterior surface of its upper third. Lachrymal pit of moderate depth and extent, its antero-posterior diameter being less than that of the three upper molars. Auditory bullæ moderately inflated, compressed, and smooth externally. Rudimentary upper canines present in both sexes. Rhinarium as in *Rusa*, with the exception of the internasal portion,

<sup>1</sup> I propose to substitute the name Sicine Deer for this group.

<sup>2</sup> *T. c.* p. 907.

which is slightly less prolonged upwards. Metatarsal tuft whitish. Tail moderate. Neck maned. In summer spotted; in winter uniform brown. Black bands on each side of the pure white anal disk form a cross with the narrow black streak along the dorsum of the tail. Stature medium. Young indistinctly spotted."

This diagnosis, which has been copied by the writers of all subsequent text-books (who of course cannot be expected to verify the statements of those specialists from whom they derive their information), is incorrect in respect to the uniform colour of the coat in winter being common to all the species. Prof. A. Milne-Edwards had previously stated that in *C. mandarinus* (regarded by Brooke as a synonym of *C. manchuricus*) the spotting is permanent; and this had also been indicated by Gray in his description of the deer which was subsequently named *C. hortulorum*. The Woburn specimens show decisively that the latter species is always spotted.

In the aforesaid paper Sir V. Brooke provisionally admitted seven species of the Sicine group, although he suggested that four of them—namely, *C. euopsis*, *C. manchuricus*, *C. dybowskii*, and *C. kopschi*—would very probably turn out to be synonyms of *C. sicc*, with which, as already stated, *C. mandarinus* was wrongly identified. With regard to *C. caspicus*<sup>1</sup>, from the mountains south-west of the Caspian, which was founded on antlers in the collection of Brooke himself, it is practically certain that this form does not belong to the Sicine group at all, of which the range will consequently be confined to North-eastern Asia. Unfortunately, the type antlers are not to be found among Brooke's collection, which has now been presented to the British Museum; but I would suggest that they not improbably belonged to some member of the Elaphine group in the second year of growth. Mr. Thomas informs me that a gentleman well acquainted with the district where these antlers were reported to have been obtained is confident no deer of a Sicine type exists there. *C. caspicus* must therefore be consigned to oblivion.

Next with regard to the true *Cervus pseudaxis* of Eydoux and Souleyet<sup>2</sup>, I can only follow Sir V. Brooke, who observes that he has hesitated to identify this with "any species of the subgenus. The specimen is still preserved in the Muséum d'Histoire Naturelle at Paris; but though I have often carefully examined it, the absence of the skull, and the great uncertainty of the locality where it was procured, render it impossible to form a decided opinion"<sup>3</sup>. Mr. Selater<sup>4</sup> has suggested that it really belongs to *C. taëvanus*, in which case that name would have to be superseded; *pseudaxis* being the earliest of all.

As the result of my examination of the Woburn collection, I conclude that apparently four distinct species of the group can be

<sup>1</sup> Brooke, P. Z. S. 1874, p. 42; 1878, p. 909.

<sup>2</sup> 'Voyage de La Bonite,' Zoology, vol. i. p. 64 (1841-52).

<sup>3</sup> In his description of *C. manchuricus*, Brooke states that the type is in the Paris Museum; but this refers to the true *C. pseudaxis*.

<sup>4</sup> Trans. Zool. Soc. vol. vii. p. 345.

distinguished; and these I proceed to consider *seriatim*, commencing with the

### 1. *Japanese Deer*.—CERVUS SICA.

#### A. *Typical Race*.—CERVUS SICA TYPICUS.

*Cervus sika*, Temminck & Schlegel, Japan Mamm. p. 54, pl. xvii. (1847); P. L. Slater, P. Z. S. 1860, p. 377, and Trans. Zool. Soc. vol. vii. p. 346, pl. xxxv. (1871); Brooke, P. Z. S. 1878, p. 908; P. L. Slater, List Anim. Zool. Gardens, p. 164 (1883); Powerscourt, P. Z. S. 1884, p. 208; W. L. Slater, Cat. Mamm. Ind. Mus. pt. ii. p. 183 (1891); P. L. Slater, List Anim. Zool. Gardens, p. 175 (1896).



*Cervus sika typicus*, male and female in summer coat.

*Rusa japonica*, Gray, Ann. Mag. Nat. Hist. ser. 3, vol. vi. p. 218 (1860); P. L. Slater, P. Z. S. 1860, p. 375, 1862, p. 150, List Anim. Zool. Gardens, p. 164 (1883)—by error *R. javanica*; W. L. Slater, Cat. Mamm. Ind. Mus. pt. ii. p. 183 (1891).

*Pseudaxis sika*, Gray, Cat. Rum. Mamm. Brit. Mus. p. 72 (1872); Hand-list Ruminants Brit. Mus. p. 142 (1873).

*Cervus euopsis*, Swinhoe, P. Z. S. 1874, p. 151; Brooke, *ibid.* 1878, p. 908; P. L. Slater, List Anim. Zool. Gardens, p. 164 (1883).

*Hab.* Japan and Northern China.

#### B. *Manchurian Race*.—CERVUS SICA MANCHURICUS.

(?) *Cervus axis*, Radde, Reise Ost-Sibirien, vol. i. p. 286 (1862); *nec* Erxl.

*Cervus mantchuricus*, Swinhoe, P. Z. S. 1864, p. 169, 1865, p. 1; P. L. Selater, Trans. Zool. Soc. vol. vii. p. 344, pls. xxxi., xxxii. (1871); Brooke, P. Z. S. 1878, p. 968; P. L. Selater, List Anim. Zool. Gardens, p. 163 (1883).

*Pseudaxis mantchurica*, Gray, Cat. Rum. Mamm. Brit. Mus. p. 72 (1872); Hand-list Ruminants Brit. Mus. p. 141 (1873).

*Cervus kopschi*, Swinhoe, P. Z. S. 1873, p. 574; Brooke, *ibid.* 1878, p. 909.

*Cervus dybowskii*, Taczanowski, P. Z. S. 1876, p. 123; Brooke, *ibid.* 1878, p. 909; *nee* W. L. Selater, Journ. Asiat. Soc. Bengal, vol. lviii. p. 186, pl. xi. (1889), and Cat. Mamm. Ind. Mus. pt. ii. p. 182 (1891).

*Hab.* Manchuria (Upper Ussuri), Kiangse, and Newchwang, China.

The name *C. sica* was originally given to the small Deer of Japan, which usually stand about 2 feet 8 inches at the shoulder, and—although profusely spotted on the body with white in summer—turn a uniform blackish-brown in winter. Generally all traces of spots disappear at the latter season, although, as noticed by Mr. Selater in his monograph in the Society's 'Transactions,' faint indications of them may sometimes be observed. *C. euopsis* of Swinhoe, from North China, appears, as mentioned by Brooke, "to differ in no appreciable external characters from ordinary specimens of *C. sica*." This form is included in Mr. Selater's "List" (1883) under the latter species; although it is remarkable that both in that "List" and the one just issued the habitat of *C. sica* is given as "Japan" only. Specimens at Woburn which probably came from China are indistinguishable from the typical form, which may accordingly be regarded as common to Japan and the mainland.

Other examples at Woburn, which likewise probably came from China—although some may be Japanese—are considerably larger than the typical form, and thus lead on to the variety *mantchuricus*. One of them is a very dark-coloured doe, which retains distinct traces of spots on the hind-quarters in the winter coat, and so resembles the still larger so-called *dybowskii*.

It would seem that intermediate forms also occur in Japan, for Sir V. Brooke<sup>1</sup> wrote as follows:—"The Society has within the last few years received living specimens of a *Pseudaxis* from Japan, which are intermediate in size between *P. sika* and *P. mantchuricus*. These have, in my opinion, with excellent judgment, been labelled by the Secretary as *Cervus mantchuricus minor*. I think it probable that, when a larger series of Pseudaxine Deer are brought together, it will be found impossible to separate them into definite species, but that it will be found necessary to regard them as one species of wide geographical range, endowed with a constitution sufficiently elastic to enable it to support very varied conditions."

<sup>1</sup> P. Z. S. 1878, p. 909.



So far as the forms to which the names quoted above refer are concerned, this prophetic opinion is in accord with the conclusions at which I have arrived from my examination of the Woburn herd. It is true that I have not found it possible to measure a series of specimens graduating from the 2 ft. 8 in. of the typical *sica* to the 3 ft. 5 in. of *C. manchuricus* and *C. dybowskii*, but intermediate forms undoubtedly exist; and I find little distinction except size between the largest and the smallest. In his description of *C. manchuricus* Mr. Slater gives the height at 3 ft. 8 in.; but I think this must be a misprint for 3 ft. 3 or 5 in., which is the height of the "co-type" of *C. dybowskii*. Apparently, the typical *C. manchuricus* is unrepresented at Woburn, unless an immature buck with faint spots in the winter coat, and a similarly marked doe, belong to it.

The type of *C. manchuricus* is figured by Mr. Slater in pls. xxxi., xxxii. of vol. vii. of the Society's 'Transactions.' The summer coat is well spotted, whereas the winter dress is a rich uniform dark brown on the upper-parts, with light chestnut patches on the shoulders; the under-parts being dark. The tail apparently has but little trace of a black line; and in a specimen of the typical *sica* in winter dress in the British Museum it is almost completely white. In summer the dark median line seems to be more marked, and there may be some black at the tip. As regards *C. kopschi*, from China, of which the type is in the British Museum, I agree with Sir V. Brooke that it is inseparable from *manchuricus*.

I now come to *C. dybowskii*, originally described on the evidence of specimens obtained from the Upper Ussuri district of Manchuria, one of which was presented by the founder of the name, Prof. Taczanowski, to the British Museum, where it has for many years been exhibited in the Mammal Gallery under the name of *manchuricus*. Indeed, it was only the other day that I became acquainted with the fact that it was one of the "co-types" of *dybowskii*. In writing of this Deer, Sir V. Brooke observed, "it is highly probable that, when we know more of this, it will be found inseparable from *C. manchuricus*." It is much to be regretted that Sir Victor did not more carefully study the original description. Had he done so, he would have found that *dybowskii* is absolutely the same as *manchuricus*, and much subsequent misunderstanding would have thereby been saved. When Prof. Taczanowski's original description is carefully studied, it will be found that there is no mention at all of *C. manchuricus*, with which the author appears to have been unacquainted. Such comparisons as are made are with *C. axis* and *C. dama*; consequently no points of difference between this deer and *C. manchuricus* are indicated, and it is pretty evident that the two are identical. It is true that Taczanowski states that the type of his species is of the colour of a Roebuck in the winter coat, with faint tracings of dapplings on the hind-quarters; but he alludes to a lighter race from the same district, and his specimen in the Museum is brown (doubtless

considerably faded) without trace of spots. The faint dappling of the darker race is paralleled by the smaller dark doe at Woburn referred to above.

The story of *C. dybowskii* does not, however, unfortunately by any means end here. In 1889 Mr. W. L. Sclater described the head, with the skin, of a deer purchased in the bazaar at Darjiling, and referred it provisionally to *dybowskii*. Subsequently this head—which was remarkable for the white muzzle—was shown by Dr. Blanford<sup>1</sup> to belong to a new Elaphine Deer described by him as *C. thoroldi*. Thinking that Mr. Sclater would not have identified a white-muzzled deer with *C. dybowskii* unless he knew that the latter had a similar nose<sup>2</sup>, I have on two occasions given a white muzzle as the distinctive character of that form. Had I known that the specimen labelled *C. manchuricus* in the British Museum was one of the “co-types” of *dybowskii*, I should not have been led into this error.

Regarding, then, all the forms mentioned above as referable to a single species very variable in point of size, I propose to distinguish the smaller typical race as *C. sica typicus*, and the larger as *C. sica manchuricus*. The latter appears to be confined to the mainland; and the former is to a great extent a smaller island race, although some small examples occur on the mainland. Mr. Thomas informs me that several other Japanese mammals are represented by a larger race or subspecies in China.

## 2. *Pekin Deer*.—*CERVUS HORTULORUM*. (Plate I.)

*Cervus pseudaxis*, Gray, P. Z. S. 1861, p. 236, pl. xxvii. (*nec* Eydoux and Souleyet).

*Cervus hortulorum*, Swinhoe, P. Z. S. 1864, p. 169.

*Hab.* Northern China.

The history of this species is somewhat remarkable. In the spring of 1861 the Zoological Society received from the late Mr. R. Swinhoe the skins of three Sicine Deer which had been shot after the taking of the Summer Palace, Pekin (Oct. 12th, 1860), when they would have assumed the winter pelage. These specimens were shortly after transferred to the British Museum, and one, a buck (No. 61. 6. 2. 1), was described and figured by Dr. Gray in the P. Z. S. for 1861, under the name of *Cervus pseudaxis*, with the express statement that it was killed in winter. As now mounted it stands 3 ft. 4 in. at the shoulder. The hair is now much faded. In Gray's figure<sup>3</sup> the hair of the body is a chestnut-

<sup>1</sup> P. Z. S. 1893, p. 444.

<sup>2</sup> Mr. Sclater, on p. 187 of his paper, says that *C. dybowskii* is described as having a white muzzle. In the original description it is stated that “il y a une tache blanche, pure, cordiforme, sur le devant du menton.”

<sup>3</sup> From a comparison with the original specimen, I find that the colouring of the figure is inexact in several particulars, the under-parts being too white and the distribution of the colours on the neck very badly shown.

brown colour, with numerous distinct white spots of considerable size; and there is a white glandular patch on the outer side of the hind leg just below the hock. The neck is unspotted, and its lower portion is of a slaty-blue colour, above which there is a dark collar, followed by chestnut-brown, the lower part of the face being also bluish grey. The under-parts are whitish; and the tail is white with a narrow black median line, but there is no distinct black cross on the buttocks. This Deer is therefore quite unlike *C. sica* in its winter coat.

The female (No. 61. 6. 2. 2), which has long been exhibited in the Mammalian Gallery as *C. manchuricus*, appears to be similarly coloured, with the exception that there is no slaty blue on the neck, and the belly is greyish, while there is a distinct black cross on the buttocks. Its height at the shoulder is 2 ft. 9 in.

In 1864 Mr. Swinhoe, being satisfied that the buck figured by Gray was not the *Cervus pseudaxis* of Eydoux and Souleyet, proposed for it the name of *C. hortulorum*. In the same letter the name *C. manchuricus* was proposed for the specimens sent home alive at the same time for the Zoological Gardens; and it is quite evident that Swinhoe was satisfied of the distinctness of the two forms.

In his description of *C. manchuricus*, Mr. Sclater<sup>1</sup> stated that Swinhoe seemed to have described the same species of Deer under two names in one letter. Mr. Sclater figures *C. manchuricus* in its dark uniform winter coat, which is indistinguishable from that of the typical *sica*; and had he given fuller attention to Gray's description and figure, it could scarcely have escaped his notice that the winter coat of *C. hortulorum* was spotted on the body, bluish grey on the neck, and light beneath. Sir Victor Brooke<sup>2</sup> followed Mr. Sclater in regarding *hortulorum* as a synonym of *manchuricus*.

When I visited Woburn last summer the Duchess of Bedford pointed out to me three large Sicine Deer obtained from near Peking at the same time as the type of *C. bedfordianus*, and remarked that these three alone seemed distinguishable from the whole of the other Japanese and Chinese representatives of the *sica* group in the collection. Although I was then somewhat sceptical on the subject, time has shown the correctness of Her Grace's diagnosis. On again visiting Woburn Abbey in the middle of November—by which time all the Deer had acquired their full winter dress—I found that these three Deer (one buck and two does) were still fully spotted on the body, although perhaps rather less so than in the summer. The ground-colour, too, of the body, instead of being blackish- or chocolate-brown, was chestnut-brown; and the lower part of the neck and the face—especially in the buck—of a leaden bluish-grey, while there was a dark collar on the upper throat. The limbs were uniform

<sup>1</sup> Trans. Zool. Soc. vol. vii. p. 345.

<sup>2</sup> P. Z. S. 1868, p. 908.

brownish grey. The under-parts were light-coloured; and there was a distinct white spot on the hind leg below the hock. Compared with the type of *C. hortulorum*, the buck differs by the greater amount of black and white on the buttocks; but as it is identical in other respects, while the Woburn does are in all respects similar to the one in the British Museum, there appears no doubt as to their specific identity. It was, of course, impossible to determine the height of these Deer, but it was decidedly greater than that of a Fallow Deer, and probably about 3 ft. 4 in. Indeed, the Pekin Deer appeared to be taller than any of the Woburn Sicines; but whether they are superior in this respect to the type of *C. sica manchuricus* I am not certain, as there do not seem to be any Deer at Woburn precisely resembling the latter in stature. Be this as it may, *C. hortulorum* appears to be a more "leggy" animal than any of the varieties of *sica*. Its bright colour, its numerous spots at all seasons, the leaden-blue colour of the base of the neck and face of the bucks, the light under-parts, and its large size serve amply to distinguish this well-marked species from all its kindred.

As habits are sometimes an important aid in the discrimination of species, it may be well to mention that the three Pekin Deer at Woburn never associate with the Sicas, but keep more or less to themselves. It may be added that by Christmas the buck at Woburn had developed a very shaggy coat, on which some of the spots are rather less brilliant than they were in autumn, and that the under-parts had turned dark grey.

The Society is indebted to the Duke of Bedford for the loan of the sketches from which the accompanying Plate (Plate I.) is copied.

### 3. Mandarin Deer.—*CERVUS MANDARINUS*.

*Cervus mandarinus*, A. Milne-Edwards, *Recherches Mamm.* p. 184, pls. xxii., xxii. a. (1871)<sup>1</sup>; Brooke, *P. Z. S.* 1878, p. 968.

? *Cervus axis*, Swinhoe, *P. Z. S.* 1864, p. 169.

*Hab.* Central China (? Hankow).

In his description of this Deer, Prof. Milne-Edwards remarks that it is distinguished from *C. manchuricus* by the more profuse spotting of the summer coat, and the retention of a large, although somewhat smaller, number of distinct spots in the winter dress on the body—the ground-colour of the latter being dark chestnut-brown, and the neck and under-parts also brown; while there is a very thick frill of long hairs on the throat. It is also mentioned that the colour of the summer coat is much brighter than in *manchuricus*. These observations are fully borne out by the two plates accompanying the memoir, which illustrate the type specimen at both seasons. From these it appears that the tail is

<sup>1</sup> The date on the titlepage of the volume is 1868-74, but Prof. Milne-Edwards has communicated to me the date of the part containing the description of this species.



longer than in *manchuricus*, and in the winter dress is reddish with but little white.

In his oft-quoted memoir on the *Cervidae*, Sir V. Brooke gives *mandarinus* as a synonym of *manchuricus*, without a single word as to the persistence of the spotting in winter. And the influence of one so well-known as an authority on the group has led to *mandarinus* being ignored as a species by all subsequent writers, although there seems little doubt that it is really a distinct form.

In his letter in the P. Z. S. for 1864 already quoted, Mr. Swinhoe wrote as follows:—"In the gardens of Messrs. Jardine, Matheson, & Co., in Hong Kong, I saw several bucks and does of *C. sica* and *C. taëvanus*, as also of *C. avis* in winter dress. The bucks of the two former had manes about the neck; *C. sica* was spotless, *C. taëvanus* with indistinct spots, while *C. avis* was of a rich yellowish-brown colour, with distinct white spots. The latter had long, thin, reddish tails, and, I think, are identical with the true *C. avis*. They are from Hankow, interior China." Now as Mr. Swinhoe must be presumed to have been well acquainted with both *manchuricus* and *hortulorum*, and as *C. avis* is unknown beyond India, it appears highly probable that these Hankow Deer were really *mandarinus*. The "long, thin, reddish tails" appear to accord well with Milne-Edwards's figure of the latter in winter dress.

#### 4. *Formosan Deer*.—CERVUS TAËVANUS.

*Cervus taiouanus*, Blyth, Journ. Asiat. Soc. Bengal, vol. xxix. p. 90 (1860); P. L. Slater, P. Z. S. 1860, p. 376.

*Cervus taëvanus*, P. L. Slater, P. Z. S. 1862, p. 152, pl. xvi.; Swinhoe, *ibid.* p. 362; P. L. Slater, Trans. Zool. Soc. vol. vii. p. 345, pls. xxxiii., xxxiv. (1871); Brooke, P. Z. S. 1878, p. 909; W. L. Slater, Cat. Mamm. Ind. Mus. pt. ii. p. 183 (1891).

*Pseudaxis taivanus*, Gray, Cat. Rum. Brit. Mus. p. 70 (1872), & Hand-list Rum. Brit. Mus. p. 141 (1873).

*Hab.* Formosa.

Sir V. Brooke observes a discreet silence as to the right of this form to rank as a species, giving none of its distinctive features. According to Mr. Slater's description and figures, the Formosan Deer appears to be of medium height (2 ft. 11 in.); the general colour of the summer dress being paler than in *sica*, and the black of the caudal disc forming a more distinct transverse bar. It is also described as having somewhat longer fur, and a white tail with a broader black median line on the upper surface; and the spots are stated to show a tendency to persist in winter. A female in the British Museum has, however, a chocolate-brown ground-colour in the summer dress. As regards form, the latter specimen appears to be a relatively lower-built animal than either *sica* or *mandarinus*. On this point, Dr. Gray observes that although the Formosan Deer, when contrasted with the Sicines from other

districts, can be readily recognized, yet to describe its distinctive characteristics in words is almost impossible.

In the Woburn collection there are a buck and doe—place of origin uncertain—which seem to differ from the other *Sicines*, and are therefore probably referable to this species. When first shown to me in the summer, they appeared distinct from all the *sica* forms, but I forget their exact coloration. In the winter coat the ground-colour is dull rufous-brown, with distinct spots, although less strongly marked than in *C. mandarinus*. The general form is also different from that of *C. sica*, being apparently lower. The tail I had no opportunity of describing.

If these Deer be really from Formosa, they seem to indicate the right of *C. taëvanus* to rank as a distinct species.

Assuming the foregoing conclusions to be approximately correct, the *Sicine* Deer may be diagnosed as follows:—

1. *Cervus sica*.—Japan and China.

Spotted in summer, uniformly coloured or nearly so in winter. Winter coat dark blackish brown, with the hairs annulated; chestnut patches on the shoulders; tail mainly white, frequently with a narrow black dorsal line, and sometimes dark terminal tuft; under-parts dark.

A. *C. sica typicus*. Size small (2 ft. 10 in.).—Japan and China.

B. *C. sica manchuricus*. Size larger (3 ft. 4 or 5 in.).—Manchuria.

2. *Cervus hortulorum*.—Northern China.

Profusely spotted at all seasons, but somewhat less so in winter. Bucks in winter with the ground-colour of the body chestnut-brown; neck without spots, bluish grey at base, then a blackish collar followed by chestnut; face bluish grey; a white spot on outer side of leg below hock; thighs and fore legs greyish brown; under-parts greyish white; tail rather short, white with black dorsal stripe. Limbs relatively long.

3. *Cervus mandarinus*.—Interior of China (? Hankow).

Spotted at all seasons. Colour darker than in last, and spots less abundant in winter coat. In winter coat, neck and limbs uniformly coloured, like body; under-parts dark; no white spot on leg; tail longer, mainly reddish, with but little white.

4. *Cervus taëvanus*.—Formosa.

Marked with large spots on a chestnut ground in summer; less distinctly spotted in winter. In winter, neck chestnut, and no white spot on leg; under-parts apparently somewhat lighter than upper; tail white, with a very broad dorsal black stripe; dark median line on back very strongly marked. Limbs relatively short.

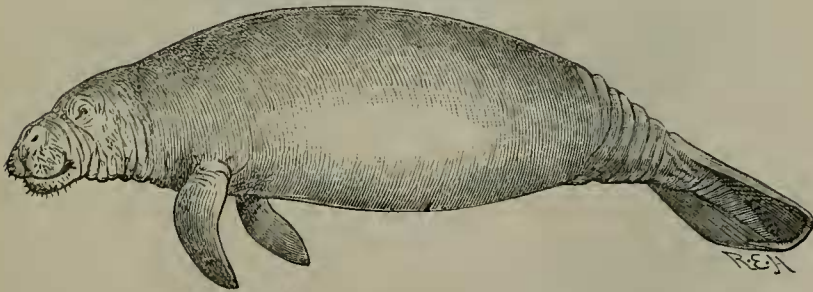
3. Notes upon the Anatomy of a Manatee (*Manatus inunguis*) lately living in the Society's Gardens. By FRANK E. BEDDARD, M.A., F.R.S., Prosector to the Society.

[Received January 18, 1897.]

The young male Manatee acquired by the Society in 1896 died, on Oct. 29th of the same year, from what appeared to me to be a very pronounced form of pleurisy. In the course of my experience at the Society's Gardens I have never seen so enormous a development of pus as this animal showed in and outside of one (the left) lung. When the organ was cut open—it could be seen, before the diaphragm was removed, to be extraordinarily distended—a mass of pus, without any odour and of the consistence of a stiff solution of flour and water, was exposed. There were several (perhaps three) pints of this matter. The other lung was apparently healthy and no particular signs of disease were noted elsewhere among the viscera. It is true that the rectum was distended with fæces, but the gut was not in any way pathological in appearance.

As has already been noted<sup>1</sup> the specimen which forms the subject of my communication to the Society is to be distinguished from the better known American species by the total absence of nails upon the hand. The most careful examination after death of the animal failed to show even indications of nails. It appeared

Fig. 1.



*Manatus inunguis*, ♂ jr.

to me also to differ from *Manatus latirostris*, as described by Murie<sup>2</sup> and Garrod<sup>3</sup>, in the comparatively slight development of the two rounded lateral processes of the upper lip, which come together in the middle line when a leaf of its food is seized by the

<sup>1</sup> P. Z. S. 1896, p. 212. See for a comparison of the three existing species of Manatee, Cl. Hartlaub, "Beiträge zur Kenntniss der Manatus-Arten," Zool. Jahrb. i. 1886, p. 1; and for a brief notice of some of the viscera of *Manatus inunguis*, A. von Pelzeln, "Brasilische Säugethiere," Verh. k.k. zool.-bot. Ges. Wien, Beiheft zu Bd. xxxiii. 1883, p. 88 (from Natterer's MS.).

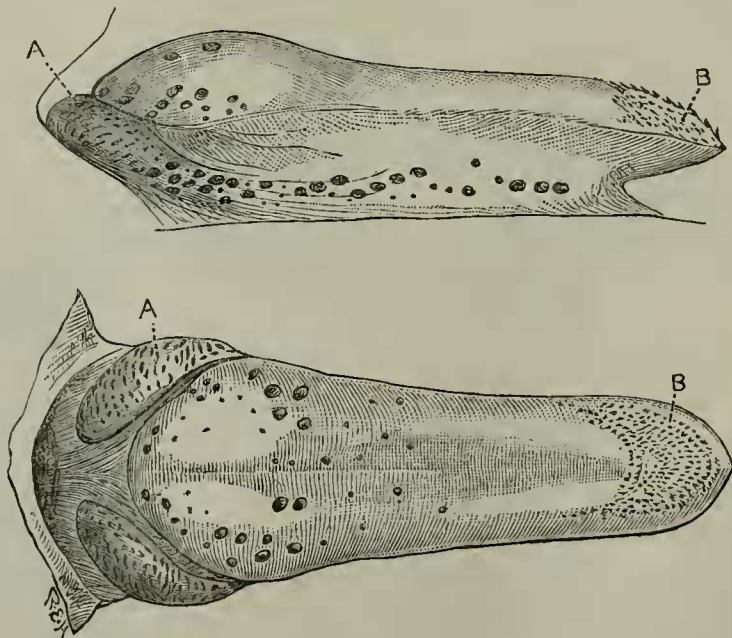
<sup>2</sup> "On the Form and Structure of the Manatee," Trans. Z. S. viii. p. 127.

<sup>3</sup> "Notes on the Manatee, &c.," *ibid.* x. p. 137.

creature. Otherwise the external characters (see fig. 1, p. 47) are much as in *Manatus latirostris*.

At the time of the death of the animal various circumstances prevented me from at once making a detailed examination of the viscera. They were accordingly placed in carbolized water and left for a day or two. It is fortunate that I was compelled to take this course, as in the other event they would have probably been thrown away before the arrival of a carcass of *M. latirostris*, for which I am indebted to Mr. Gerrard, jun. If I had had only the descriptions and drawings of Dr. Murie and Prof. Garrod to compare my dissections with, I should have come to various erroneous conclusions—not, indeed, on account of any deficiencies in those drawings and descriptions, but simply on account of the variability of certain of the organs and the immense difficulty of detecting minute divergencies between an organ in one animal and its description in another. In addition to the specimen which I obtained from Mr. Gerrard, I found among the Prosector's stores some of the viscera of a small male Manatee, which I imagine to be that which arrived in 1893 in company with the mother, and died a day or two afterwards. But I am not positive about this, and the individual may be that which was obtained by the Society in 1889. In any case the youth of the specimen has enabled me to discriminate between real specific characters and differences probably due to age.

Fig. 2.



Tongue of *Manatus inunguis*. The upper figure represents a lateral the lower the dorsal surface.

A, Mayer's organ; B, recurved papillæ at end of tongue.



Of the alimentary viscera I have had a drawing prepared of the tongue (fig. 2, p. 48), which does not greatly differ from that of the more common American species. It appears to me, however, that the large patch of circumvallate papillæ (Mayer's organ) of the two sides of the tongue are a little more closely approximated than in *M. latirostris*.

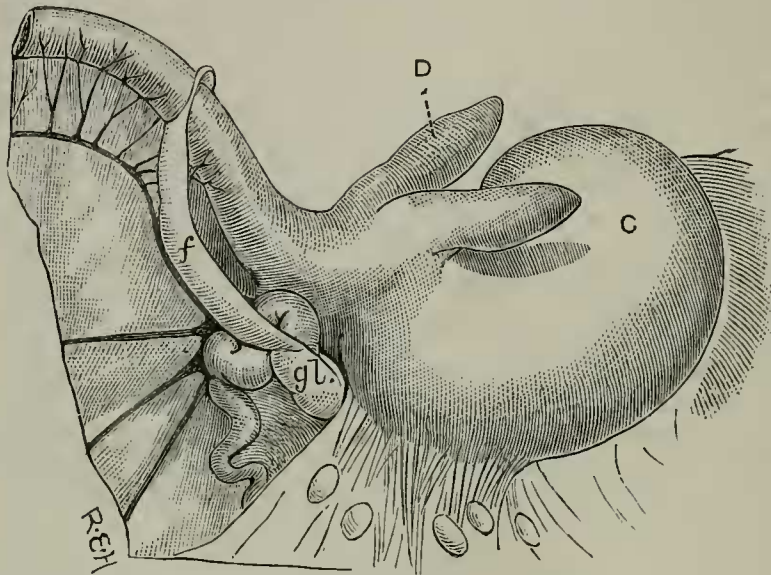
The stomach of *Manatus inunguis* shows a few minute differences from that of *M. latirostris*. The largest compartment of the stomach is much smoother inside than in either of the two *M. latirostris* that I examined; in the smaller spirit-preserved specimen of the latter species, indeed, the wrinkling of the sides of the stomach near to its orifice into compartment IV. was so marked as to suggest the ruminant reticulum. The two lateral diverticula of the stomach are subequal in *M. latirostris*, at least in the larger of the two specimens that I examined and in the individuals described by Murie. But in the small *M. latirostris* and in *M. inunguis* the left is considerably the larger; moreover, this diverticulum is more coiled in the larger *M. latirostris* than in either the small specimen or in *M. inunguis*—a further difference which may perhaps be due to age. The unpaired glandular diverticulum of the cardiac stomach is relatively shorter in the large *M. latirostris*.

The bile-duct and the pancreatic duct open on to prominent papillæ whose relative positions may be a mark of specific distinction. In *M. latirostris* they are rather further apart, and the pancreatic duct is more in front of the orifice of the ductus choledochus than in *M. inunguis*, where the latter is behind but markedly below the former.

As to the intestinal canal, the most remarkable feature is the great length of the large intestine, which is not far short of the small intestine; Peyer's patches are numerous, and in the last foot of the ileum I counted twelve of them varying much in shape and size, but being usually elongated and running in the furrows between the rugæ of the gut, as indeed Dr. Murie has noted in *Manatus latirostris*. At the actual orifice of the intestine into the cæcum a patch of exceptional size is found. The general shape of the cæcum, which is displayed in the accompanying drawing (fig. 3, p. 50), is precisely like that of the other species of Manatee, and I should not have had the drawing prepared were it not for a peculiar fold of mesentery which it is the main purpose of that sketch to illustrate. This fold, which is not referred to by Dr. Murie, lies on either side of the mesentery supporting the ileum and runs nearly to the cæcum. It does not bear a blood-vessel, and the fold of either side is continuous with its fellow by a complete bridge over the front side of the ileum as is indicated in the sketch. Both species are precisely alike in the presence and in the relations of these two mesenteries. On cutting open the cæcum it seemed to me that there was a recognizable difference between the two species. The two orifices of the finger-like appendages of the cæcum were closer together in *M. latirostris* and to the orifice of

the ileum. In my young spirit-preserved specimen there was a very narrow septum indeed between the wide mouths of the finger-like appendages.

Fig. 3..



Cæcum of *Manatus inunguis*.

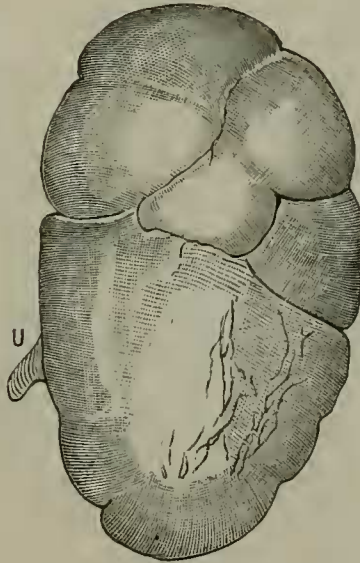
C, cæcum; D, its two diverticula; f, fold of mesentery; gl, a coiled mesenteric lymphatic gland.

The liver of *Manatus latirostris* has been described without figures by Murie and with figures by Garrod. If I had not had the opportunity of seeing the actual liver myself I should have found certain well-marked differences between the two species which are really non-existent. The organ in fact varies in form to some extent. Garrod's figures agree more closely on the whole with the liver of *M. inunguis* than with that of the individual of *M. latirostris* which I have studied myself. Garrod figures the central lobe of the right half of the organ as being but little separated from its lateral lobe, than which it is much smaller. In my specimens, both of *M. latirostris* and *M. inunguis*, the separation was much more marked. The left lateral lobe of *M. latirostris*, according to Garrod, is fairly notched on its lower border; it agrees, in fact, closely with *M. inunguis*, but not with the *M. latirostris* dissected by myself. On the under surface of the left lateral lobe in *M. latirostris* I found a deep rounded cavity, which appeared to have lodged during life the glandular appendix of the stomach. This was so deep that it very nearly perforated the liver tissue. I observed nothing of the kind in *M. inunguis*. The gall-bladder, as in *M. latirostris*, is large; it was not so fully overlapped by a triangular piece of the right lobe as in *M. latirostris*, as figured by Garrod and observed by myself.

The kidneys of *Manatus latirostris* have been described rather

differently by various observers. Owen states that they are lobulated, thus differing from the Dugong which has non-lobulated kidneys. Murie describes the kidneys in the following words:—"Each renal organ in our female is 5 inches long, the two lying opposite one another. Their figure is simple, with only a superficial indication of lobulation, but in reality absence of division; hilus shallow." I found the kidneys in the larger of the *M. latirostris* examined by me to be six inches in length by three in breadth; they are distinctly lobulated externally (fig. 4), and before

Fig. 4.

Kidney of *Manatus latirostris*.

U, ureter.

the kidney was divided longitudinally the appearances shown in the accompanying drawing were visible. The lobulation after the organ has been cut in half is seen to descend right to the middle reservoir of the organ, the cortical layer dipping down and completely shutting off the compartments of medullary substance. The hilus is on the *side* of the kidney and not on its inner edge. On the other hand, in the small example of *M. latirostris* the kidney, measuring nearly three inches by one and a half in breadth, showed no traces whatever of lobulation, and the hilus was as nearly as possible on the edge of the gland. In *Manatus inunguis* the shape of the organ, as may be gathered from its measurements, is rather different. It measured three and a half inches in length by two and a quarter in breadth, and showed no traces of lobulation. The hilus was on the side as in the large *M. latirostris*. The seeming variability (or is it an unusual change due to age?) of *M. latirostris* is remarkable.

The heart of the Manatee is, as is well known, peculiar by

reason of the marked separation of the two ventricles (not so marked, however, as in the Dugong), and by the conspicuousness of the coronary arteries which ramify over its surface; the organ is also, as has been remarked, small for the size of its possessor. I found that in *M. inunguis* the ductus arteriosus was perfectly permeable and was a tube of some size; in the heart of a young *M. latirostris* a little more than half its size, the ductus was tube-like in form and had an orifice into the pulmonary artery, but was apparently not permeable throughout. In the *M. latirostris* with a heart twice the size, the ductus was absent or rather represented by a flat non-tubular ligament. This seems to indicate a specific difference between the two forms in the relative age at which the ductus arteriosus degenerates. But it is, on the other hand, quite likely that there are variations in respect of this. The right ventricle in all three specimens was less sculptured on its inner surface than the left. It has in all three a moderator band, which is most pronounced in *M. inunguis*. This moderator band in that species is continued forwards after it has become adherent to the ventricular wall to the base of one of the semilunar valves of the pulmonary artery. In the young *M. latirostris* this was so to a less extent; while in the larger *M. latirostris* the moderator band was free from the heart-wall for a less extent and did not run forwards to the base of the valve at all. I observed no differences in the mode of origin of the principal arteries of the aorta in the three specimens.

The brain of *Manatus latirostris* has been described and figured by Murie<sup>1</sup>, Chapman<sup>2</sup>, Garrod<sup>3</sup>, and by Murie<sup>4</sup> again. Of these the last-mentioned paper appears to me to contain the best figures. I have in my possession a brain of that species which differs slightly from previously described brains; the drawing (fig. 5, p. 53) will also enable me to compare more satisfactorily the two species in respect of their brain structure.

This organ in fact shows certain slight but characteristic differences in the two Manatees. In the first place there is the shape when the brain is viewed from above: in *M. inunguis* the cerebral hemispheres are markedly longer in proportion to their breadth, the two dimensions being, as nearly as I could measure, 65 mm. and 30 mm.; on the other hand, in my specimen of *M. latirostris* the same measurements were 65 mm. and 37 mm., about the same as those of the brain figured by Garrod. The outline of each hemisphere is more distinctly C-shaped in *M. inunguis*, the C's being of course back to back. The only fissures of the hemispheres in *M. inunguis* are the Sylvian, both of which are Y-shaped above. Seen laterally each fissure runs forward near to its termination; but the forwardly directed part of the fissure is, in my opinion, the rhinal fissure, which does not, at least so

<sup>1</sup> "On the Form and Structure of the Manatee," Tr. Z. S. viii. p. 627.

<sup>2</sup> "Observations on the Structure of the Manatee," Proc. Acad. Nat. Sci. Philad. 1875, fig. 452.

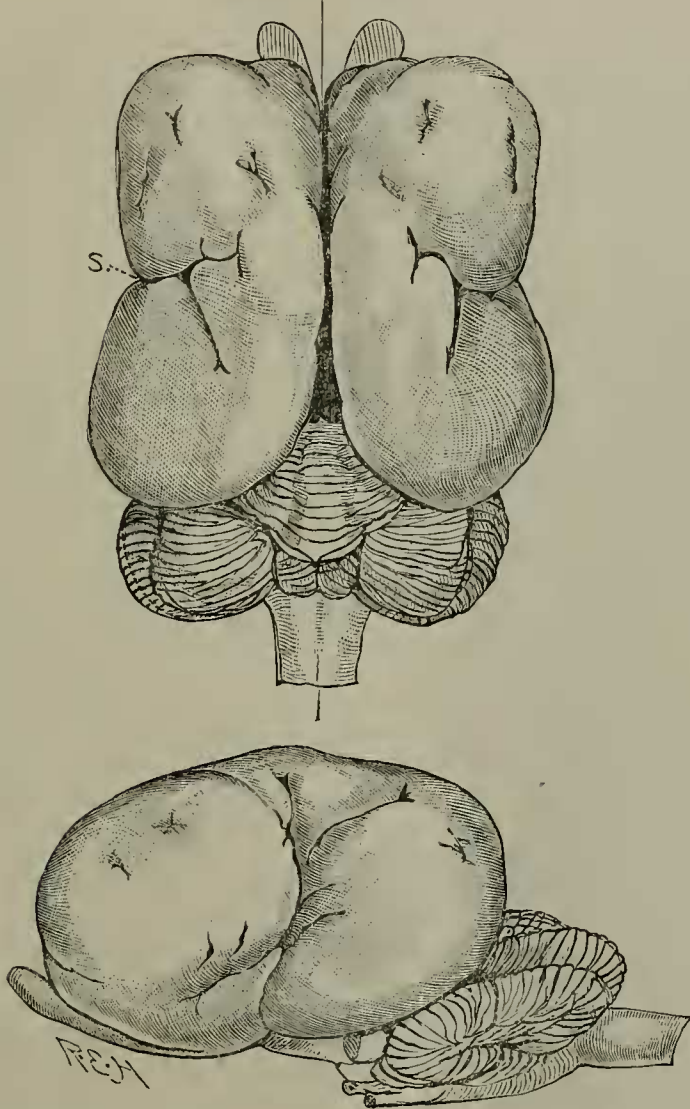
<sup>3</sup> "Notes on the Manatee, &c.," Tr. Z. S. x. p. 137.

<sup>4</sup> "Further Observations on the Manatee," *ibid.* xi. p. 19.



conspicuously, exist to mark off the temporal lobe posteriorly. In *M. latirostris*, on the other hand, the Sylvian fissure is plainly seen to be continuous with a V-shaped rhinal fissure separating off the pallium, the wedge-shaped tract of brain (very elephantine!), thus

Fig. 5.



Brain of *Manatus inunguis*. The upper figure represents the dorsal aspect, the lower a lateral view.

S, Sylvian fissure.

exposed when the organ is viewed laterally, being itself divided by a continuation of the Sylvian fissure. On the upper surface of the brain, moreover, there is, as indicated in Murie's figure, a short transverse furrow not present in *M. inunguis*.

4. Revision of the West-Indian Micro-Lepidoptera, with Descriptions of new Species. By the Rt. Hon. Lord WALSINGHAM, M.A., LL.D., F.R.S.

[Received November 5, 1896.]

About two years ago I received a communication from Baron W. von Hedemann asking me to examine and determine a collection of Micro-Lepidoptera which he had made in the Danish West Indies. Although at first very unwilling to undertake the task, anticipating, not without reason, that there would be a large amount of new material, and that it would involve a very difficult study of the synonymy of described species and of general classification, I felt that such a study must necessarily be very instructive, and that the opportunity should not be lost to enlarge my limited acquaintance with the West-Indian fauna. Moreover, as the Danish Islands lie to the north of those which supplied the material for my previous paper [Proc. Zool. Soc. Lond. 1891, pp. 492-549 (1892)], they promised to afford some connecting links with the rich fauna of North America, already somewhat known to me. As to the instruction to be derived, and as to the difficulty of the work undertaken, my calculations were not at fault; moreover, the rediscovery of Clemens's genus *Cycloplasis*, with some other decidedly North-American forms, has been of special interest in connexion with the subject of distribution. The amount of material to be dealt with was largely increased by the reception of a further collection from the same islands made by Mr. F. Gudmann. These, together with the Micros collected by Mr. H. H. Smith in Grenada (from the Godman and Salvin collection), and others received from Dr. Rendall, Mr. T. D. A. Cockerell, Mr. W. Schaus, Mr. F. W. Urich, and the late Monsieur E. Ragonot, form the materials of this paper. It is in fact a second edition of the former one, bringing the West-Indian catalogue of Micro-Lepidoptera up to date, on the lines of the new system of classification put forward by Mr. E. Meyrick in his 'Handbook of British Lepidoptera,' which marks an epoch in the study of these small and often obscure forms.

When the paper was commenced I was working upon the old lines, with such modifications only as had become obviously necessary as the general study of the subject has advanced; but the publication of Mr. Meyrick's book supplied a want, and his system seemed to be so near at least to that which I was already working up to by an independent course of study and reasoning, that no effort was required to induce me to accept in the main his sequence of the different families and genera; this has been adopted so far as possible, with the one notable exception of the position and value of the *Tortricidæ*, which cannot, in my opinion, be rightly separated from the *Tineina*, and should take a place

rather in the middle than at either end of the series of families which form this group.

The adoption of Mr. Meyrick's system, of course, involved great changes in generic nomenclature, for which he had given no reasons. In some cases where his alterations have been accepted, the reasons for such acceptance are here set forth: in all cases where I have been unable to accept his generic names I have fully discussed and explained how the names here adopted have been arrived at. For any further explanation on this point, the reader may now refer to the code of rules compiled by Mr. Durrant and myself, which has lately been published by Messrs. Longmans under the title 'Rules for regulating Nomenclature with a view to secure a strict application of the Law of Priority in Entomological Work.'

In my previous paper 132 species were enumerated as occurring in the West Indies: of these 10 were simply mentioned as "sp."; these are now deducted, as are also *Scoptonoma tipuloides*, Wlsm. (now regarded as belonging to the *Pyralidina*); *Pterophorus aspilodactylus*, Wkr. (now regarded as a worn specimen of *P. agraphodactylus*, Wkr.); *Cænogenes pusilla* (Z.), Wlsm. (wrongly identified, and described in the following pages as *Hypoclopus parvus*, sp. n.); *Psecadia adustella*, Z. (= *Tamarrha gelidella*, Wkr.); *Psecadia ingricella*, Mschl. (= *Ethmia confusella*, Wkr.); *Cosmopteryx lespedezae*, Wlsm. (= *Cosmopteryx attenuatella*, Wkr.: Walker referred this species to *Gelechia*, which must be my excuse for the creation of the synonym); *Cosmopteryx gemmiferella* (Clem.?), Mschl. (recorded with doubt by Möschler, and here omitted as being probably synonymous with *attenuatella*, Wkr.). These deductions reduce my former list to 115 species (132—10—7). To this total is now added 34 species already described, and these, together with 153 new species, raise the total of the West-Indian Micro-Lepidoptera to 302 species (115+34+153). Nineteen genera are characterized as new.

The species recorded from each of the islands are as follows:—Cuba, 23; Jamaica, 31; Haiti (or San Domingo), 50; Portorico, 37; St. Croix, 57; St. Thomas, 114; St. Jan, 3; St. Martin, 1; Guadeloupe, 1; Dominica, 7; Martinique, 1; St. Lucia, 2; St. Vincent, 43; Grenada, 60; Trinidad, 8; Curaçao, 1.—WEST INDIES, 302.

Of these species, 27 occur in the United States, 4 in Central America, and 28 in South America; 5 are found also in Europe, 3 in India and also in other parts of Asia, while one extends to Malaysia; 5 occur in Australia, and 4 in Africa. The larvæ of 49 species are known, of which number 34 have been bred in the West Indies.

What is now specially wanted is some knowledge of the Micros of the more northern islands stretching towards the coast of Florida, as well as from the peninsula of Florida itself. There is strong reason to believe that very beautiful and distinct forms of these insects are to be found in Cuba, Portorico, and Haiti, and also in Florida—such as have been already received include some

remarkably fine and distinct species; and I trust that the publication of this paper may induce collectors to supply material from these more northern localities, with which we are at present so little acquainted.

The collections made by von Hedemann and Gudmann are for the most part in beautiful condition, the specimens well set and mounted, and a large proportion of them bred. Full data have been given by which the life-history of each bred species can be followed, and this information has added much to the value of the specimens; unfortunately, the note-books in which descriptions of the different larvæ had been written were lost.

I must express my indebtedness to my two Danish correspondents for their kindness in allowing me to keep a large number of duplicates, which will eventually find their way to the British Museum with the remainder of my collections; and Baron von Hedemann has also been kind enough to examine for me such types of Fabricius's West-Indian species as are extant in the Copenhagen Museum. I must also return my thanks to my other correspondents whose names are mentioned above, especially to Messrs. Godman and Salvin for placing much valuable material in my hands.

## I. PYRALIDINA.

### I. PTEROPHORIDÆ.

#### 1. TRICHOPTILUS, Wlsm.

##### 1. TRICHOPTILUS CENTETES, Meyr.

*Trichoptilus centetes*, Meyr. Tr. Ent. Soc. Lond. 1886, 16-17<sup>1</sup>; 1887, 266<sup>2</sup>; Wlsm. Pr. Z. Soc. Lond. 1891, 494-5, 542 (1892)<sup>3</sup>.

[? = *Pterophorus oxydactylus*, Wkr. Cat. Lp. Ins. B. M. XXX. 944 (1864). *Aciptilia oxydactyla*, Wlsm. Pr. Z. Soc. Lond. 1885, 885 (1886). *Pterophorus oxydactylus*, Moore, Lp. Ceyl. III. 528-9, Pl. 209. 16 (1887); Swinh. & Cotes, Cat. Moths Ind. 669. No. 4549 (1889). *Trichoptilus oxydactylus*, Wlsm. Pr. Z. Soc. Lond. 1896, 277 (1896).—Ceylon; India, IX., XII.; Arabia, II.-III., IX., XII.]

Hab. NEW GUINEA, XI.<sup>1</sup> QUEENSLAND<sup>2</sup>. West Indies<sup>3</sup>—St. Croix, 22 IV.-18 V. (*Gudmann, Hedemann, Pontoppidan*); St. Thomas, 13 III.-25 III. (*Gudmann, Hedemann*); St. Vincent<sup>3</sup>.

Bred by Mr. Gudmann at St. Croix, but the food-plant has not been identified.

#### 2. SPHENARCHES, Meyr.

##### 2. SPHENARCHES CAFFER, Z.

= *ANISODACTYLUS*, Wkr.<sup>10</sup>; n. syn. = *DIFFUSALIS*, Wkr.; = *WALKERI*, Wlsm.<sup>10</sup>; = *SYNOPHRYS*, Meyr.<sup>10</sup>

*Pterophorus caffer*, Z. Hndl. Kngl. Svensk. Vet.-Ak. 1852, 118<sup>1</sup>. *Oxyptilus caffer*, Z. Lin. Ent. VI. 348-9 (1852)<sup>2</sup>; Wkr. Cat. Lp.



Ins. B. M. XXX. 934 (1864)<sup>3</sup>. *Oxyptilus anisodactylus*, Wkr. Cat. Lp. Ins. B. M. XXX. 934-5 (1864)<sup>4</sup>. *Pterophorus diffusalis*, Wkr. Cat. Lp. Ins. B. M. XXX. 945 (1864)<sup>5</sup>. *Oxyptilus caffer*, Wlsm. Tr. Ent. Soc. Lond. 1881, 279<sup>6</sup>. *Oxyptilus walkeri*, Wlsm. Tr. Ent. Soc. Lond. 1881, 279-80<sup>7</sup>. *Sphenarches synophrys*, Meyr. Tr. Ent. Soc. Lond. 1886, 17-8<sup>8</sup>. *Oxyptilus anisodactylus*, Moore, Lp. Ceyl. III. 528 (1887)<sup>9</sup>. *Sphenarches caffer*, Meyr. Tr. Ent. Soc. Lond. 1887, 268<sup>10</sup>. *Oxyptilus anisodactylus*, Swinh. & Cotes, Cat. Moths Ind. 668. No. 4542 (1889)<sup>11</sup>. *Sphenarches caffer*, Cotes, Ind. Mus. Notes, II. 20, figg. (1891)<sup>12</sup>; Wlsm. Ind. Mus. Notes, II. 20-1 (1891)<sup>13</sup>; Cotes, Ind. Mus. Notes, II. 163 (1893)<sup>14</sup>.

*Larva*. "Calabash" (Gambia)<sup>13</sup>; in pods of *Dolichos lablab* (India)<sup>12-14</sup>.

*Hab.* S. AFRICA—Caffraria<sup>1-3, 13</sup>, Natal, XI.-XII.<sup>7, 13</sup> E. AFRICA<sup>13</sup>. W. AFRICA—Gambia<sup>13</sup>. ASIA—Japan<sup>13</sup>, Ceylon<sup>4, 9-11, 13</sup>, India<sup>12-14</sup>, Burma<sup>13</sup>. AUSTRALASIA—New South Wales, II.<sup>10</sup>, Queensland (Moreton Bay)<sup>5</sup>, New Hebrides<sup>8</sup>, Tonga Ids.<sup>8</sup> West Indies—St. THOMAS, 20 III. (*Gudmann*); GRENADA (Balthazar, 250 ft., windward side, 15-20 IV.—*H. H. Smith*).

*Oxyptilus periscelidactylus*, Fitch, from the United States, belongs to the genus *Sphenarches*, and is at least very closely allied to *caffer*, Z.

### 3. PLATYPTILIA, Hb.

#### 3. PLATYPTILIA PUSILLIDACTYLA, Wkr.

= *TECNIDION*, Z.<sup>3</sup>

*Oxyptilus pusillidactylus*, Wkr. Cat. Lp. Ins. B. M. XXX. 933 (1864)<sup>1</sup>. *Platyptilia tecnidion*, Z. Hor. Soc. Ent. Ross. XIII. 468-9, Pl. VI. 162 (1877)<sup>2</sup>. *Platyptilia pusillidactyla*, Wlsm. Pr. Z. Soc. Lond. 1891, 495, 542 (1892)<sup>3</sup>. *Amblyptilia pusillidactyla*, Hdm. Stett. Ent. Ztg. LVII. 8 (1896)<sup>4</sup>.

*Hab.* West Indies—JAMAICA<sup>1, 3</sup>; ST. CROIX,<sup>4</sup> 22 IV. (*Gudmann*); ST. THOMAS, II.<sup>2, 3, 4</sup>; GRENADA (Balthazar, 250 ft., and La Force Estate, 350 ft., windward side, 5 IV.-5 V.—*H. H. Smith*).

#### 4. PLATYPTILIA COSMODACTYLA, Hb.

(? = *ACANTHODACTYLUS*, Z.<sup>7</sup>) = *DIREPTALIS*, Wkr.<sup>7</sup>

*Alucita cosmodactyla*, Hb. Samml. Eur. Schm. IX. Pl. VII. 35-36 (1816?)<sup>1</sup>. *Amblyptilia cosmodactyla*, Hb. Verz. bek. Schm. 430. No. 4183 (1826)<sup>2</sup>, &c. [? *Pterophorus acanthodactylus*, Z. Handl. Kongl. Svensk. Vet.-Ak. 1852, 117<sup>3</sup>.] *Oxyptilus direptalis*, Wkr. Cat. Lp. Ins. B. M. XXX. 934 (1864)<sup>4</sup>. *Amblyptilia cosmodactyla*, Stgr. & Wk. Cat. 342, No. 3131 (1871)<sup>5</sup>. *Amblyptilus cosmodactylus*, Wlsm. Pter. Cal. & Or. 23-5, Pl. II. 2-4 (1880)<sup>6</sup>; Tr. Ent. Soc. Lond. 1881, 277-8 (1881)<sup>7</sup>. *Platyptilia cosmodactyla*, Meyr. Tr. Ent. Soc. Lond. 1890, 486 (1890)<sup>8</sup>.

*Hab.* EUROPE<sup>1, 2, 5, 8</sup> [larva, *Aquilegia vulgaris*, *Geranium pratense*, *Salvia glutinosa*]. S. AFRICA—Transvaal<sup>3</sup>, Cape Colony<sup>4</sup>, Natal,

VII.-VIII., XI.<sup>7</sup> UNITED STATES—California<sup>6</sup>, Oregon<sup>8</sup> (b. IV. —e. VIII.; larva *Orthocarpus* sp., VI.)<sup>6</sup>. West Indies—JAMAICA (Cinchona, 5000 ft., IX., *Fawcett*).

I am indebted to Mr. Cockerell for the specimen collected by Mr. Fawcett. There is another specimen in the British Museum, labelled "Jamaica (Cinchona), 90.65, 6.90, W. Fawcett."

#### 4. OCHYROTICA, Wlsm.

##### 5. OCHYROTICA FASCIATA, Wlsm.

*Ochyrotica fasciata*, Wlsm. Ent. Mo. Mag. XXVII. 218 (1891)<sup>1</sup>: Nov. Lp. I. 75-6, Pl. XII. 2 (1892)<sup>2</sup>.

*Hab.* CENTRAL AMERICA<sup>1,2</sup>. West Indies—GRENADA (Balthazar, 250 ft., windward side, 20 IV.—*H. H. Smith*). BRAZIL<sup>1,2</sup>.

#### 5. STENOPTILIA, Hb.

= *MIMÆSEOPTILUS*, Wlgrn.

##### 6. STENOPTILIA (?) PUMILIO, Z.

= \**GILVIDORSIS*, Hdm. partim. (*nec* Z.).

*Mimeseoptilus pumilio*, Z. Verh. z.-b. Ges. Wien, XXIII. 324 (1873)<sup>1</sup>. *Stenoptilia* ? *pumilio*, Wlsm. Pr. Z. Soc. Lond. 1891, 495, 542 (1892)<sup>2</sup>. *Mimeseoptilus gilvidorsis*, Hdm. Stett. Ent. Ztg. LVII. 8-9 (1896)<sup>3</sup>.

*Hab.* UNITED STATES—Texas<sup>1</sup>. West Indies—JAMAICA (Monteague, 1100 ft., XI., *Rendall*); ST. CROIX,<sup>3</sup> 28 IV. (*Hedemann*), V.<sup>3</sup>; ST. VINCENT<sup>2</sup>; GRENADA (windward side—Balthazar, 250 ft., La Force Estate, 350 ft., 5 IV.—5 V.—*H. H. Smith*).

Heer Snellen's opinion on the probable synonymy of *gilvidorsis*, quoted by von Hedemann (*l.c.* No. 3), is quite justified, for I had already examined the two types side by side, and had made a note that *gilvidorsis*, Z., must sink as a synonym of *tenuis*, F. & R. Baron von Hedemann has sent me the three specimens which were determined for him by Snellen: two are *montis-christi*, Wlsm., and the third is *pumilio*; there is at present no evidence that *gilvidorsis* occurs in the West Indies.

[*STENOPTILIA TENUIS*, F. & R.

n. syn. = *GILVIDORSIS*, Z.

*Mimeseoptilus tenuis*, F. & R. Reise Nov., Lep. Pl. CXL. 50 (1875)<sup>1</sup>. *Mimeseoptilus gilvidorsis*, Z. Hor. Soc. Ent. Ross. XIII. 471-2, Pl. VI. 164 (1877)<sup>2</sup>.

*Hab.* COLOMBIA—Bogota<sup>1,2</sup>, 12 II.-14 III.<sup>2</sup>]

#### 6. PTEROPHORUS, Geoffr.

Type, *Phalena* (*Alucita*) *monodactyla*, L.

PTEROPHORUS, Geoffr. Hist. Ins. Par. II. 24-5, 90-3 (1762); Wlgrn. Vet.-Ak. Handl. III. (7) 20 (1859); Wlsm. & Drnt. Ent. Mo. Mag. XXXIII. 41-2 (1897).

† *OIDÆMATOPHORUS*, Wlgrn. Vet.-Ak. Handl. III. (7) 19 (1859).  
 [† *ÆDEMATOPHORUS*, Wlgrn. Bib. Svensk. Vet.-Ak. Handl. III. 85 (1875).]

= § *LEIOPTILUS*, Wlgrn. Vet.-Ak. Handl. III. (7) 21 (1859).

= \* *ALUCITA* (L.), Meyr. Tr. Ent. Soc. Lond. 1890, 487.

The type of *Alucita*, L., was fixed as *pentadactyla*, L., by Poda, Ins. Mus. Græc. p. 94 (1761), and Lamarck, Syst. An. sans Vert. 288 (1801), cited the same species as the type of *Pterophorus*, Geoffr.; but this action was inadmissible, *pentadactyla* having already been constituted the type of *Alucita*. Latreille, Préc. Gen. Ins. 148 (1796), described the genus *Orneodes*, omitting to cite the type; subsequently, however, Hist. Nat. Crust. Ins. III. 418 (1802): XIV. 258 (1805), this omission was remedied, *hexadactyla*, L., being cited as the type. By this action and Poda's the genus *Pterophorus* became monotypical with the type *Alucita monodactyla*, L. In this sense it was used by Wallengren, but Meyrick, Tr. Ent. Soc. Lond. 1890, 487, wrongly employed *Pterophorus* for *pentadactyla*, and *Alucita* for *monodactyla*.

#### 7. *PTEROPHORUS INQUINATUS*, Z.

n. syn. = *AMBROSIE*, Mrt.

*Edematophorus inquinatus*, Z. Verh. z.-b. Ges. Wien, XXIII. 325 (1873)<sup>1</sup>. *Edematophorus ambrosie*, Mrt. Am. Ent. III. 236 (1880)<sup>2</sup>. *Edematophorus inquinatus*, Cqllt. Pap. I. 61-2 (1882)<sup>3</sup>; Hdm. Stett. Ent. Ztg. LVII. 9 (1896)<sup>4</sup>.

*Larva*. *Ambrosia artemisiæfolia* <sup>2,3</sup>, VII. <sup>3</sup> excl. VIII. <sup>3</sup>

*Hab.* UNITED STATES—Texas, 23 VII.<sup>1</sup>, Missouri <sup>2</sup>. West Indies—HAYTI (Cap Haiti, 19 VI.—Gudmann); ST. THOMAS, 7 IV.<sup>4</sup>

#### 8. *PTEROPHORUS MONTIS-CHRISTI*, sp. n.

= *Mimæseoptilus gilvidorsis*, Hdm. Stett. Ent. Ztg. LVII. 8-9 (1896), *partim*.

(*Antennæ* broken.) *Palpi* projecting scarcely beyond the head; pale cinereous. *Head* slightly tufted over the face; hoary grey. *Thorax* hoary greyish, whitish posteriorly. *Fore wings* hoary grey, sparsely scattered with very minute fuscous speckling, which is also noticeable along the base of the hoary-grey cilia, especially on the dorsum. *Exp. al.* 17 mm. *Hind wings* shining hoary grey, with a bronzy reflection on their cilia. *Abdomen* [in the two specimens before me greasy and discoloured, but obviously paler than the wing-colour, as indicated also by the very pale patch on the posterior portion of the thorax at the base]. *Hind legs* with the spurs very long and slender; pale cinereous.

*Type*, ♂ Mus. Wlsm.; ♀ Mus. Gudmann.

*Hab.* West Indies—SAN DOMINGO (Monte Christi, 19 V. 1894; two specimens, "♂ & ♀ taken in copulâ," Gudmann); ST. CROIX: 2-5 V. (Hedemann, two specimens); GRENADA (Balthazar, 250 ft., windward side, 15 IV., H. H. Smith; one specimen).

9. *PTEROPHORUS OSSIPELLIS*, sp. n.

*Antennae* bone-grey. *Palpi* very short, projecting, slender; bone-white. *Head* and *thorax* bone-grey. *Fore wings* of almost even width throughout; costa straight, second lobe scarcely widened at its middle; uniformly bone-grey, the extreme costa slightly paler throughout; cilia bone-grey. *Eap. al.* 16 mm. *Hind wings* bone-grey with a slightly bluer tinge; cilia bone-grey. *Abdomen* bone-grey. *Legs* white, unspotted.

*Type*, ♂ Mus. Gudmann.

*Hab. West Indies*—SAN DOMINGO (Puerto Plata, 15 V.; one specimen, Gudmann).

10. *PTEROPHORUS PARVUS*, Wlsm.

*Leioptilus* ? *parvus*, Wlsm. Pter. Cal. & Or. 55-7, Pl. III. 12 (1880)<sup>1</sup>.

*Hab. UNITED STATES*—California *e.* VII.<sup>1</sup> *West Indies*—GRENADA (Balthazar, 250 ft., windward side, 15 III.-30 IV.—*H. H. Smith*).

11. *PTEROPHORUS THOMÆ*, Z.

*Leioptilus thomæ*, Z. Hor. Soc. Ent. Ross. XIII. 480-1, Pl. VI. 170 (1877)<sup>1</sup>. *Alucita thomæ*, Wlsm. Pr. Z. Soc. Lond. 1891, 495, 542 (1892)<sup>2</sup>. *Leioptilus thomæ*, Hdm. Stett. Ent. Ztg. LVII. 9 (1896)<sup>3</sup>.

*Hab. West Indies*—HAYTI (Port-au-Prince, Cap Haiti, 19-24 V.: Gudmann); ST. THOMAS, XII.<sup>1,3</sup>

12. *PTEROPHORUS PRÆEUSTUS*, Mschl.

*Pterophorus præeustus*, Mschl. Ab. Senck. Nat. Ges. XV. 346, 354 (1890)<sup>1</sup>. *Alucita præeustus*, Wlsm. Pr. Z. Soc. Lond. 1891, 496, 542 (1892)<sup>2</sup>.

*Hab. West Indies*—PORTORICO<sup>1,2</sup>.

Judging from the description this is probably the same as *thomæ*, Z.

13. *PTEROPHORUS BASALIS*, Mschl.

*Edematophorus basalis*, Mschl. Ab. Senck. Nat. Ges. XV. 345-6, 354 (1890)<sup>1</sup>. *Alucita basalis*, Wlsm. Pr. Z. Soc. Lond. 1891, 495, 542 (1892)<sup>2</sup>.

*Hab. West Indies*—PORTORICO<sup>1,2</sup>.

14. *PTEROPHORUS PALEACEUS*, Z.

*Leioptilus paleaceus*, Z. Verh. z.-b. Ges. Wien, XXIII. 326-7 (1873)<sup>1</sup>. *Pterophorus paleaceus*, Mschl. Ab. Senck. Nat. Ges. XV. 346, 354 (1890)<sup>2</sup>. *Alucita paleaceus*, Wlsm. Pr. Z. Soc. Lond. 1891, 495, 542 (1892)<sup>3</sup>.

*Hab. UNITED STATES*—Ohio<sup>1,3</sup>, Texas<sup>1,3</sup>. *West Indies*—PORTORICO<sup>2,3</sup>.



## 15. PTEROPHORUS BIPUNCTATUS, Mschl.

= \*MICRODACTYLUS, Hdm. (nec Hb.).

*Pterophorus bipunctatus*, Mschl. Ab. Senck. Nat. Ges. XV. 346, 354 (1890)<sup>1</sup>. *Alucita bipunctatus*, Wlsm. Pr. Z. Soc. Lond. 1891, 496, 542 (1892)<sup>2</sup>. *Leioptilus microdactylus*, Hdm. Stett. Ent. Ztg. LVII. 9 (1896)<sup>3</sup>.

*Hab.* UNITED STATES—Florida (*Morrison*, Mus. Wlsm.). West Indies—PORTORICO<sup>1, 2</sup>; ST. CROIX, 28 IV. (*Gudmann*); ST. THOMAS, 20 III. (*Gudmann*), IV.<sup>3</sup>; GRENADA (Balthazar, 250 ft., windward side, 5–27 IV.—*H. H. Smith*).

I am unable to agree with Heer Snellen, as quoted by Baron von Hedemann (*l. c.* No. 3), that the West-Indian species allied to *microdactylus*, Hb., is actually our common European insect. Baron von Hedemann has sent me the specimen determined for him by Snellen, and I must certainly regard it as distinct. A very noticeable spot occurs on the lower margin of the anterior lobe of the fore wings a little beyond the opposite costal spot, and this is not present in *microdactylus*; moreover, the anterior wings appear to me to be distinctly narrower in proportion to their length. In any case there can be little doubt that it is the *bipunctatus* of Möschler.

## 16. PTEROPHORUS PARTICIPATUS, Mschl.

*Pterophorus participatus*, Mschl. Ab. Senck. Nat. Ges. XV. 346, 354 (1890)<sup>1</sup>. *Alucita participatus*, Wlsm. Pr. Z. Soc. Lond. 1891, 496, 542 (1892)<sup>2</sup>.

*Hab.* West Indies—PORTORICO<sup>1, 2</sup>.

## 17. PTEROPHORUS AGRAPHODACTYLUS, Wkr.

n. syn. = ASPILODACTYLUS, Wkr.

*Pterophorus agraphodactylus*, Wkr. Cat. Lep. Ins. B. M. XXX. 941 (1864)<sup>1</sup>. *Pterophorus aspilodactylus*, Wkr. Cat. Lep. Ins. B. M. XXX. 941–2 (1864)<sup>2</sup>; Butl. Pr. Z. Soc. Lond. 1878, 495<sup>3</sup>. *Lioptilus agraphodactylus*, Wlsm. Pter. Cal. & Or. 46–7, Pl. III. 6 (1880)<sup>4</sup>. *Pterophorus agraphodactylus*, Wlsm. Pr. Z. Soc. Lond. 1891, 496, 542 (1892)<sup>5</sup>. *Pterophorus aspilodactylus*, Wlsm. Pr. Z. Soc. Lond. 1891, 496, 542 (1892)<sup>6</sup>.

*Hab.* UNITED STATES—Oregon, V.<sup>4</sup> West Indies—JAMAICA<sup>2, 3, 6</sup>; SAN DOMINGO<sup>1, 4, 5</sup>.

I can only regard the type of *aspilodactylus* as a worn specimen of *agrapodactylus*, and Walker himself suggested that it might be only a variety or a faded example of this species.

## II. ORNEODIDÆ.

## 7. ORNEODES, Ltr.

= \*ALUCITA, Z., auct.

## 18. ORNEODES EUDACTYLA, F. &amp; R.

*Alucita* (*Pselia*?) *eulactyla*, F. & R. Reise Nov., Lep. Pl. CXL.

62 (1875)<sup>1</sup>; Mschl. Ab. Senck. Nat. Ges. XV. 346, 354 (1890)<sup>2</sup>.  
*Orneodes eudactyla*, Wlsm. Pr. Z. Soc. Lond. 1891, 496, 542  
 (1892)<sup>3</sup>.

*Hab.* COLOMBIA<sup>1,3</sup>; BRAZIL<sup>1,3</sup>. West Indies—PORTORICO<sup>2,3</sup>.

## II. TINEINA.

### I. ÆGERIADÆ.

Although I quite agree with Mr. Meyrick as to the location of this family, I am not at present sufficiently acquainted with its literature to attempt to give a complete list of the West-Indian species. There are probably many other species known beside the following:—

#### S. SESIA, F.

##### 19. SESIA CUBANA, HS.

*Sesia cubana*, HS. C.B., Z.M. Ver. Regensb. (sep.) 28 (1865)<sup>1</sup>.

*Hab.* West Indies—CUBA<sup>1</sup>.

### II. GELECHIADÆ.

#### 9. BRACHMIA, Hb.

= † *BRACLUNIA*, Stph. (*laps. cal.*).

= § *CLADODES*, Hein.

= *EUDODACLES*, Snell.

BRACHMIA, Meyr. (*nec* Stgr. Cat.).

#### 20. BRACHMIA? FULVIDELLA, sp. n.

*Antennæ* dull ochreous. *Palpi* dull ochreous, the second and apical joints each with a tawny-reddish shade externally. *Head* and *thorax* whitish ochreous. *Fore wings* whitish ochreous, variable in the colour and quantity of their shading; a female in good condition (which I select as the type) having a tawny-reddish suffusion extending from the base nearly to the termen, around which is a row of six elongate fuscous spots, the pale ground-colour appearing also in a narrow streak along the base of the fold and in a streak along the discal cell, in which are two fuscous blotches, the larger before, the smaller one beyond the middle; *cilia* whitish ochreous, with a slight vinous gloss, especially around their tips. (In other specimens the dorsal half of the wing is almost entirely whitish ochreous, the reddish suffusion being confined to the costal and apical portions.) *Exp. al.* 15 mm. *Hind wings* pale greyish; *cilia* with a slight ochreous tinge. *Abdomen* yellowish grey. *Legs* pale ochreous.

*Type*, ♂ ♀ Mus. Wlsm.

*Hab.* West Indies—ST. THOMAS, 9 III.–20 IV. (*Gudmann*, *Hedemann*). Six specimens.

“Die Raupe ist sehr dünn und schmal, 16-füssig, in der Mitte am breitesten; dunkel chocoladebraun, mit zwei Reihen feiner weissen Punkte auf jeder Seite des Rückens, so dass auf jedem Segment zwei Punktwarzen sich finden, jede mit einem schwarzen Haar versehen. Kopf rund, schwarzbraun. Das erste Leibsegment durchsichtig fleischfarbig im ersten Drittel, auf den hinteren  $\frac{2}{3}$  mit einem Schild von der Farbe des Kopfes. Bauch, Füsse und After von der Farbe des Rückens.

“Raupe auf den Blättern der *Bromelia pinguin*, L., gefunden in einem Gespinnst mit eingewobenen Excrementen und Blattresten. Das Gespinnst befindet sich in der inneren Höhlung des Blattes, dicht an der Blattwurzel. Anscheinend frisst die Raupe nicht die Blätter, sondern nur die Blattreste, die sie in ihr Gespinnst festwebt.” (*Gudmann*.)

I am unable to separate from the types three slightly smaller captured females in which the tawny-reddish suffusion is much modified by greyish-fuscous sprinkling, and the pale ochreous ground-colour inclines to pale cinereous.

This species differs from the type of the genus in having veins 7 and 8 coincident, arising from a common stem with 9; but at present I am unwilling to create a new genus for its reception.

#### 10. ARISTOTELIA, Hb., Meyr.

This genus has been separated into sections under various names, such as *Evagora*, Clem., *Apodia*, Hein., *Ergatis*, Hein. The first two names are preoccupied, and *Ergatis* is a synonym of *Aristotelia*.

*Aristotelia* is used in a more extended sense in this paper than is accorded to it by Meyrick. At present it seems unnecessary to rename the different sections as here given, but this can be done at any future time if the subdivisions founded on neuration should be regarded as of sufficient value; when probably some of Walker's or Chambers's generic names will be found to apply.

The species which have veins 3 and 4 of the hind wings connate are narrow-winged derivatives of *Aristotelia*, and are not allied to *Gelechia*.

§ A. *Fore wings*, 7 and 8 stalked, 6 out of 7. *Hind wings*, 3 and 4 connate. (=§ *EVAGORA*, Clem.)

#### 21. ARISTOTELIA ANNULICORNIS, sp. n.

*Antennae* pale straw-ochreous, minutely banded above with greyish fuscous, a distinct blackish band across the middle of the basal joint. *Palpi* pale straw-ochreous, with two smoky-black spots on the outer side of the second joint and a smoky-black ring near the end of the apical joint. *Head* and *thorax* pale straw-ochreous. *Fore wings* pale straw-ochreous, with a slight ferruginous shade along the middle from one-third to two-thirds, and several smoky-black spots and dots: the first at the base of the costa,

small and inconspicuous; at one-third a larger costal spot, with one, immediately above the dorsum, straight below it; at two-thirds a larger costal spot, with a very small one straight below it at the end of the cell, a few smaller ones lying around the apex and apical margin; cilia pale straw-ochreous with a slight vinous gloss. *Exp. al.* 8 mm. *Hind wings* pale grey; cilia with a slight vinous gloss. *Abdomen* yellowish grey. *Legs* whitish ochreous.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—ST. THOMAS, 12 III.–14 IV. (*Gudmann*, *Hedemann*). Four specimens.

## 22. ARISTOTELIA EROMENE, sp. n.

*Antennæ* stout; whitish ochreous, faintly annulated towards the apex. *Palpi* stout, second joint almost as long as the apical, smooth-scaled; whitish ochreous, clouded with fuscous externally, especially at the base and apex of the second joint, apical joint with two black annulations. *Head* and *thorax* pale ochreous. *Fore wings* pale ochreous, somewhat shaded with chestnut-brown along the middle; an elongate black costal spot at the base with a smaller one immediately beneath it; a small triangular costal spot before the middle, almost connected with two others placed obliquely beneath it, extending backward to the dorsum; a larger triangular costal spot (also black) before the commencement of the costal cilia; on the dorsum, beneath and before it, a slender black streak lies a little beyond the middle but does not leave the margin; a terminal series of small groups of black scales at the base of the greyish-ochreous cilia. *Exp. al.* 9 mm. *Hind wings* shining, pale grey; cilia shining, pale ochreous. *Abdomen* shining, greyish. *Posterior legs* whitish ochreous, externally smeared with fuscous.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—ST. THOMAS, 20 III. (*Gudmann*); ST. CROIX, 2 V.–9 VI. (*Hedemann*, *Pontoppidan*). Three specimens.

Bred at St. Thomas by Mr. Gudmann from larvæ feeding on *Bromelia pinguin*, L.

This species differs from *annulicornis*, Wlsm., in the first dorsal spot being nearer to the base than the costal spot above it and in the larger size of the outer costal spot, as well as in the darker tone of colouring of the fore wings and in the absence of the annulation on the basal joint of the antennæ.

## 23. ARISTOTELIA ORNATIPALPELLA, sp. n.

*Antennæ* rather stout, simple; cinereous with a slight indication of dark transverse lines above. *Palpi* smooth; olive-grey, with three black annulations on the second joint and two on the apical joint. *Head* and *thorax* dark olive-grey. *Fore wings* olive-grey, with a slight greenish tinge; a short black basal patch occupying the costal half is followed by a smaller costal patch at one-third, with a black dorsal patch a little beyond it; at the upper extremity



of the latter is a round black spot on the cell, almost connected with it; another small black costal patch lies at the commencement of the costal cilia and a round black dot beneath it at the end of the cell; a few black scales are scattered along the termen at the base of the olive-grey cilia. *Exp. al.* 8 mm. *Hind wings* shining, grey; cilia pale brownish grey. *Abdomen* brownish grey. *Legs* greyish, with dark patches on the spurs; hind tibiæ somewhat hairy above, tarsi faintly spotted.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—GRENADA (Balthazar, 250 ft., windward side, 27 IV.—H. H. Smith). Unique.

#### 24. ARISTOTELIA OSTARIELLA, sp. n.

*Antennæ* bone-white, very faintly annulated. *Palpi* slender, smooth, second joint scarcely thicker than the apical; bone-white, speckled with greyish fuscous. *Head* and *thorax* bone-whitish. *Fore wings* bone-whitish; a small greyish-fuscous spot at the base of the costa is followed by a small triangular costal spot before the middle, forming, with two others below it, a narrow transverse fascia tending slightly outwards to the dorsum; halfway between this and the apex is another greyish-fuscous costal patch with a dark fuscous spot below it at the end of the cell; a few greyish-fuscous scales around the termen at the base of the bone-ochreous cilia. *Exp. al.* 8 mm. *Hind wings* shining, very pale grey; cilia pale greyish ochreous. *Abdomen* greyish ochreous. *Legs* pale whitish ochreous.

*Type*, ♂ Mus. Gudmann.

*Hab.* West Indies—ST. THOMAS, 22–31 III. (Gudmann). Two specimens.

#### 25. ARISTOTELIA KITTELLA, sp. n.

*Antennæ* (broken): basal joints black with a white annulation. *Palpi* smooth, very slender, second joint as long as the apical joint and scarcely to be distinguished from it in thickness; black externally with white annulations, one on the second joint and three on the apical. *Head* sooty-black. *Thorax* cream-white, with a black transverse band anteriorly which also crosses the base of the white tegulæ. *Fore wings* cream-white; a small black costal spot at the base, a broad black transverse fascia before the middle, slightly attenuated at its centre, and a triangular black costal spot halfway between the fascia and the apex, this is preceded by a small black spot on the dorsum and followed by a few black scales on the termen below the apex; cilia cream-white. *Exp. al.* 7 mm. *Hind wings* shining, very pale grey; cilia with a slight yellowish tinge. *Abdomen* grey; anal tuft subochreous. *Legs* shining, cream-whitish.

*Type*, ♂ Mus. Gudmann.

*Hab.* West Indies—HAYTI (Port-au-Prince, 22 V., Gudmann). Unique.

## 26. ARISTOTELIA DORSIVITTELLA, Z.

*Gelechia* (*Teleia*?) *dorsivittella*, Z. Verh. z.-b. Ges. Wien, XXIII. 267-8, Pl. III. 20 (1873)<sup>1</sup>. *Gelechia dorsivittella*, Chamb. Bull. U.S. G.G. Surv. IV. 143 (1878)<sup>2</sup>; Riley, Smith's List Lep. Bor. Am. 101. No. 5357 (1891)<sup>3</sup>.

*Hab.* UNITED STATES<sup>2,3</sup>—Texas<sup>1</sup>. West Indies—ST. CROIX, 6-14 V. (*Gudmann*, *Hedemann*).

§B. Fore wings, 7 and 8 stalked, 6 out of 7. Hind wings, 3 and 4 separate.

## 27. ARISTOTELIA ROSEOSUFFUSELLA, Clem.

= *BELLELA*, Wkr.<sup>16</sup>

*Gelechia*? *roseosuffusella*, Clem. Pr. Ac. Nat. Sc. Phil. XII. 162-3, 434 (1860)<sup>1</sup>; Pr. Ent. Soc. Phil. II. 121 (1863)<sup>2</sup>. *Gelechia bellela*, Wkr. Cat. Lp. Ins. B.M. XXIX. 595 (1864)<sup>3</sup>. *Gelechia roseosuffusella*, Stn. Tin. N. Am. pp. x, 40, 113-4, 225 (1872)<sup>4</sup>; Chamb. Can. Ent. IV. 69, 148, 169, 193 (1872)<sup>5</sup>. *Gelechia* (*Ergatis*) *roseosuffusella*, Z. Verh. z.-b. Ges. Wien, XXIII. 272-3, Pl. IV. 24 (1873)<sup>6</sup>. *Gelechia roseosuffusella*, Mrt. Can. Ent. VI. 222 (1874)<sup>7</sup>; Chamb. Can. Ent. VI. 231 (1874)<sup>8</sup>. *Gelechia rosasuffusella*, Chamb. Cin. Qr. Jr. Sc. II. 290 (1875)<sup>9</sup>. *Gelechia roseosuffusella*, Chamb. Bull. U.S. G.G. Surv. III. 125<sup>10</sup>, 141 (1877)<sup>11</sup>; Can. Ent. IX. 14 (1877)<sup>12</sup>; Bull. U.S. G.G. Surv. IV. 110<sup>13</sup>, 146 (1878)<sup>14</sup>; Jr. Cin. Soc. N. H. II. 183 (1880)<sup>15</sup>. *Gelechia* (*Ergatis*) *roseosuffusella*, Wlsm. Tr. Am. Ent. Soc. X. 180 (1882)<sup>16</sup>. *Gelechia roseosuffusella*, Riley, Smith's List Lep. Bor. Am. 102. No. 5470 (1891)<sup>17</sup>.

*Hab.* UNITED STATES<sup>1-17</sup>, VI.<sup>6</sup>, VII.<sup>10</sup>, VIII.<sup>9</sup> Larva *Trifolium pratense*<sup>7,13</sup>. West Indies—SAN DOMINGO (Monte Christi, 17 V., *Gudmann*).

## 28. ARISTOTELIA PUDIBUNDELLA, Z.

n. syn. = *INTERMEDIELLA*, Chamb.

*Gelechia* (*Ergatis*) *pudibundella*, Z. Verh. z.-b. Ges. Wien, XXIII. 273-4 (1873)<sup>1</sup>. *Gelechia intermediella*, Chamb. Bull. U.S. G.G. Surv. IV. 89, 144 (1878)<sup>2</sup>. *Gelechia pudibundella*, Chamb. Bull. U.S. G.G. Surv. IV. 146 (1878)<sup>3</sup>. *Gelechia intermediella*, Wlsm. Tr. Am. Ent. Soc. X. 180-1 (1882)<sup>4</sup>. *Gelechia* (*Ergatis*) *pudibundella*, Wlsm. Tr. Am. Ent. Soc. X. 181 (1882)<sup>5</sup>. *Gelechia intermediella*, Riley, Smith's List Lep. Bor. Am. 101. No. 5392 (1891)<sup>6</sup>. *Gelechia pudibundella*, Riley, Smith's List Lep. Bor. Am. 102. No. 5454 (1891)<sup>7</sup>.

*Hab.* UNITED STATES<sup>1-7</sup>, VII.<sup>1</sup> West Indies—HAÏTI (Cap Haïti, 18 V., *Gudmann*); ST. CROIX, 28 IV.-7 V. (*Hedemann*), 7 VII. (*Pontoppidan*).

29. *ARISTOTELIA TROSSULELLA*, sp. n.

*Antennæ* brownish fuscous, annulated with white beyond their basal fourth. *Palpi* long, slender, smooth, apical joint somewhat longer than the second; subochreous, the second joint transversely banded with three brownish bars, the apical joint with slender brownish longitudinal lines. *Head* and *thorax* olive-brown. *Fore wings* bright olive-brown; from the extreme base an oblique leaden-grey line extends downwards to the dorsum at one-fifth; beyond it an oblique black line leaving the costa at one-fifth reaches nearly to the dorsum, accompanied throughout on its outer edge by a pinkish-ochreous line followed by steel-grey scales; a patch of steel-grey scales a little before the middle of the costa scarcely reaches beyond the upper margin of the cell, and is followed beyond the middle by a small pinkish-ochreous costal dot connected by some steel-grey scales with an inwardly oblique pinkish-ochreous line reverting towards the middle of the dorsum, black-margined on its inner edge and with steel-grey scales externally; some spots of steel-grey scales lie a little above the tornus, others being scattered around the termen and the inner extremities of a series of pinkish ochreous spots which, to the number of about seven, follow the margin of the wing at the base of the costal and terminal cilia and are separated by some dark fuscous scales; cilia subochreous along their base, outwardly with two slender grey lines running through them except at the tornus where they are uniformly greyish. *Exp. al.* 10 mm. *Hind wings* grey; cilia paler. *Abdomen* brownish grey. *Legs* whitish ochreous, obliquely banded with greyish fuscous externally.

*Type*, ♂ Mus. Gudmann.

*Hab.* West Indies—JAMAICA (Kingston, 19 VII., Cockerell); SAN DOMINGO (Monte Christi, 19 V., Gudmann). Two specimens.

30. *ARISTOTELIA PULICELLA*, sp. n.

*Antennæ* stoutish,  $\frac{2}{3}$ ; greyish, with some darker bands towards the apex. *Palpi*: second joint longer than the apical; whitish, the second joint with two black spots beneath, apical joint with two black rings, one at the base the other before the apex. *Head* and *thorax* whitish grey. *Fore wings* whitish grey, shaded with greyish fuscous, especially along the costal third; this is interrupted on the costa by a pale median space and some pale speckling before the apex; some minute blackish dots are scattered along the line of the fold, with one on the disc before the middle and a few black scales beneath the apex at the base of the yellowish-grey cilia. *Exp. al.* 7 mm. *Hind wings* brownish grey; cilia yellowish grey. *Abdomen* yellowish grey. *Legs* whitish ochreous, the tibiae broadly banded externally and the tarsi minutely spotted posteriorly with fuscous.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—ST. THOMAS, 7-S III. (Gudmann, Hedemann). Three specimens.

31. *ARISTOTELIA CRASSICORNIS*, sp. n.

*Antennæ* stout, somewhat flattened; very pale cinereous. *Palpi* slender, second joint longer than the apical, slightly roughened beneath especially at the extremity of the second joint; whitish, shaded externally nearly to the end of the second joint, apical joint faintly biannulate. *Head* and *thorax* hoary whitish. *Fore wings* hoary whitish, sprinkled with greyish-fuscous scaling; with numerous short, slender, dark fuscous longitudinal streaklets accompanied by a few ferruginous scales, these have a tendency to follow the lines of the cell and of the fold, being only indicated on the costa by a minute streak at the base and two spots, one before the other behind the middle; cilia hoary whitish dusted with fuscous atoms. *Exp. al.* 8 mm. *Hind wings* shining, pale grey; cilia yellowish grey. *Abdomen* shining, iridescent, silvery grey. *Legs* whitish, tarsi unspotted.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—ST. JAN, 13–16 IV. (*Gudmann*). Two specimens, bred from a plant which was not identified.

“Raupe cylindrisch, 16-füssig, bläulich hellgrün mit einem rothen Gürtel, bestehend aus vier dunkelrothen Flecken in der Einschnürung zwischen den Segmenten, und zwei grössere rothe Flecke stehen am Rücken jedes Segments. Kopf hellbraun, Füsse von der Grundfarbe; das letzte Leibsegment bläulich grün, mit einem grossen rothen Flecke auf dem Rücken.

“Die Raupen leben zu zwei, drei oder vier gesellig zwischen zusammengesponnenen Blättern, und alle Excremente werden theils zwischen den Blättern, theils ausserhalb des Randes der Blattwohnung festgesponnen, so dass die Raupen ganz versteckt sind.” (*Gudmann*).

§ C. *Fore wings*, 7 and 8 stalked, 6 separate. *Hind wings*, 3 and 4 separate.

32. *ARISTOTELIA PICTICORNIS*, sp. n.

*Antennæ* delicately annulated with white and blackish. *Palpi* very slender, smooth; beautifully marked with alternate rings of white and fuscous throughout. *Head* and *thorax* brownish fuscous. *Fore wings* brownish fuscous, evenly speckled and mottled with ashy grey throughout; a faint indication of a dark spot beyond the middle of the fold and groups of ashy-grey scales around the termen at the base of the ashy-grey cilia, through which run a slender dark dividing line beyond their middle. *Exp. al.* 10 mm. *Hind wings* as broad as the fore wings; pale chestnut-grey; the cilia about the termen grey, along the dorsum inclining to chestnut. *Abdomen* brownish ochreous. *Legs* with alternate rings of white and fuscous.

*Type*, ♂ Mus. Hedemann.

*Hab.* West Indies—ST. CROIX, 2 V. (*Hedemann*). Unique.



## 11. EUCATOPTUS, g. n.

(ευκἀτοπτος=easily seen.)

Type, *Eucatoptus penicillata*, Wlsm.*Antennæ* ( $\frac{3}{4}$ ), ♂ very shortly ciliate; without pecten.*Maxillary palpi* very short.*Labial palpi* recurved; apical joint pointed, almost as long as the second; second joint somewhat flattened laterally, not roughly clothed beneath.*Haustrum* well developed.*Head* and *thorax* smooth.*Fore wings* with the costa evenly arched; apex depressed, bluntly pointed; termen oblique, tornus evenly rounded. *Neuration*: 12 veins, 7 and 8 stalked, 7 to costa, 6 separate (6 sometimes out of 7, e. g. *chalybeichroa*).*Hind wings* hardly 1, elongate, trapezoidal; apex produced, pointed; termen emarginate beneath apex; tornus angular, dorsum straight; cilia  $1\frac{1}{2}$ ; ♂ with long pencil of expansible hairs from the base of the costa (extending almost the length of the cell of the fore wings). *Neuration*: 8 veins; 3, 4, and 5 remote, almost parallel, 6 and 7 remote.*Abdomen* slender.*Legs*: hind tibiae thinly haired above.Closely allied to *Aristotelia*, Hb., from which it is distinguished by the costal hair-pencil of the ♂.§ A. *Fore wings*, 7 and 8 stalked, 6 out of 7. *Hind wings*, 3 and 4 separate.

## 33. EUCATOPTUS CHALYBEICHTROA, sp. n.

*Antennæ*: basal joint somewhat enlarged and flattened in the ♂; whitish cinereous, very faintly annulated with two darker bands towards the apex. *Palpi*: second joint as long as the apical joint, somewhat roughly clothed; dirty whitish, with two fuscous spots on the second joint externally and two fuscous annulations on the apical joint. *Head* and *thorax* dirty whitish, speckled with cinereous. *Fore wings* brownish cinereous, with a steely gloss throughout and some ferruginous scaling, especially on the outer half; at the extreme base of the costa is a small dark fuscous spot, narrowly connected with an oblique narrow broken fascia of the same colour, extending outwards to the dorsum, which it reaches at about one-fourth the wing-length; beyond this is a minute black spot on the outer half of the fold, the remainder of the wing to the apex being speckled with black scales, some preceded by whitish; on the costa before the apex is an elongate shining whitish spot, followed by black speckling around the base of the terminal cilia which partake of the wing-colour, but tending to pale grey at the tornus, with a dark shade running

around their extreme tips. *Exp. al.* 9 mm. *Hind wings*: ♂ with a strong expansible hair-pencil at the base of the costa; shining pale steel-grey; cilia with a slight yellowish tinge. *Abdomen* shining pale brownish cinereous. *Legs* whitish cinereous, much speckled with greyish fuscous.

*Type*, ♀ Mus. Wlsm.; ♂ Mus. Gudmann.

*Hab. West Indies*—ST. THOMAS, 4-8 IV. (bred from *Acacia arabica*—Gudmann).

§ B. *Fore wings*, 7 and 8 stalked, 6 separate. *Hind wings*, 3 and 4 separate; with costal hair-pencil in ♂.

#### 34. EUCATOPTUS PENICILLATA, sp. n.

*Antennae* greyish. *Palpi*: second joint smooth but somewhat stout; white, but spotted externally with greyish fuscous, the apical joint biannulate with the same. *Head* whitish ochreous. *Thorax* light ochreous. *Fore wings* ochreous, mottled with greyish fuscous and metallic steel-grey, with creamy-white streaks and spots; an oblique greyish-fuscous patch, edged with blackish scales externally, extends from the base of the costa nearly to the dorsum and is immediately followed by a triangular whitish streak of equal length; two small whitish spots on the costa beyond it are followed around the termen by short streak-spots through the terminal cilia; two small black dots lie on the cell, the first at one-half, the other at its end; the steel-grey mottling appears to accompany the paler markings, except in the case of one patch near the tornus: a rosy tinge appears beyond the edge of the cell and between the black dots upon it; cilia rosy greyish. *Exp. al.* 10 mm. *Hind wings*: ♂ with a conspicuous, long, brownish ochreous, expansible hair-pencil arising near the base of the costa; pale grey, cilia brownish grey. *Abdomen* brownish grey. *Legs* whitish, faintly spotted externally.

*Type*, ♀ Mus. Gudmann; ♂ Mus. Wlsm.

*Hab. West Indies*—HAÏTI (Cap Haïti, 20 V., Gudmann); SAN DOMINGO (Monte Christi, 12 V., Gudmann); ST. CROIX, 28 IV. (Hedemann); ST. THOMAS, 12-31 III. (Gudmann, Hedemann).

#### 35. EUCATOPTUS RUBIDELLA, Clem.

= *RUBENSELLA*, Chamb.<sup>9</sup>; = \**PUDIBUNDELLA*, Chamb. (nec Z.).

*Gelechia*? *rubidella*, Clem. Pr. Ac. Nat. Sc. Phil. XII. 163, 434 (1860)<sup>1</sup>; Pr. Ent. Soc. Phil. II. 121 (1863)<sup>2</sup>; Stn. Tin. N. Am. pp. x, 40, 115, 225 (1872)<sup>3</sup>. *Gelechia rubensella*, Chamb. Can. Ent. IV. 193-4 (1872)<sup>4</sup>; Mrt. Can. Ent. VI. 222 (1874)<sup>5</sup>. *Gelechia pudibundella*, Chamb. Can. Ent. IX. 23 (1877)<sup>6</sup>. *Gelechia rubensella*, Chamb. Bull. U.S. G.G. Surv. IV. 89, 147 (1878)<sup>7</sup>. *Gelechia rubidella*, Chamb. Bull. U.S. G.G. Surv. IV. 147 (1878)<sup>8</sup>. *Gelechia (Ergatis) rubidella*, Wlsm. Tr. Am. Ent. Soc. X. 180-1 (1882)<sup>9</sup>. *Gelechia rubensella*, Pack. U.S. Dept. Agr. Rp. Ent. V.

220, No. 387 (1890)<sup>10</sup>. *Gelechia rubidella*, Riley, Smith's List Lep. Bor. Am. 102. No. 5471 (1891)<sup>11</sup>.

*Hab.* UNITED STATES<sup>1-11</sup>, VIII.<sup>4</sup> Larva *Quercus*<sup>5,10</sup>. **West Indies**—ST. CROIX, 24-6 IV. (*Hedemann*); ST. THOMAS, 9 III. (*Gudmann*).

36. *EUCATOPTUS LYCOPERSICELLA*, sp. n.

*Antennæ* mouse-grey, faintly annulated. *Palpi* rather short, somewhat stout, smooth; greyish fuscous externally, with four white bands; uniformly whitish on their inner side. *Head* and *thorax* mouse-grey. *Fore wings* greyish fuscous, evenly sprinkled with mouse-grey and some ferruginous; without describable markings, except a series of small groups of blackish scales around the termen at the base of the cilia, which are the same colour as the wing, except at the tornus where they are plain greyish. *Exp. al.* 9 mm. *Hind wings*: ♂ with a long ochreous hair-pencil above from the base of the costal margin; grey, cilia the same. *Abdomen* greyish. *Legs* whitish ochreous, laterally banded with greyish fuscous externally; hind tibiæ with ochreous hairs above.

*Type*, ♀ Mus. Wlsm.; ♂ Mus. Gudmann.

*Hab.* **West Indies**—ST. CROIX, 3-5 V. (*Gudmann*). Two specimens.

“Die Raupe lebt an *Lycopersicum* in einem umgeschlagenen Blattrande, von welcher Wohnung es, wenn es frisst, geht *minirend* in das Blatt hinein.” (*Gudmann*.)

12. *GENIADOPHORA*, gen. n.

(*γενειάς* = a beard; *φορεῖν* = to bear.)

*Type*, *Pæcilia extranea*, Wlsm.

*Antennæ* more than  $\frac{2}{3}$ ; basal joint long and slender.

*Maxillary palpi* minute.

*Labial palpi* recurved, divergent; apical joint as long as second; second joint with a divided comb-like brush beneath, extending also less conspicuously above it at its outer end.

*Haustrillum* moderate.

*Ocelli* present.

*Head* and *thorax* smooth.

*Fore wings* narrow, elongate, apex slightly rounded, termen obliquely rounded. *Neuration*: 12 veins, 7 and 8 stalked, 7 to apex, the others separate.

*Hind wings* narrower than the fore wings, apex acute, termen obliquely bisinuate, dorsum parallel with costa. *Neuration*: 8 veins, 3 remote from 4, 6 and 7 separate, 5 approximated to 4.

*Legs*: hind tibiæ with long fine hairs above.

37. *GENIADOPHORA EXTRANEA*, Wlsm.

*Pæcilia extranea*, Wlsm. Pr. Z. Soc. Lond. 1891, 521-2, 546 (1892)<sup>1</sup>.

*Hab.* **West Indies**—ST. VINCENT, V.<sup>1</sup>; GRENADA (*H. H. Smith*).

## 13. XENOLECHIA, Meyr.

## 38. XENOLECHIA GLANDIFERELLA, Z.

= *SELLA*, Chamb.<sup>3</sup>

*Gelechia* (*Anacampsis*) *glandiferella*, Z. Verh. z.-b. Ges. Wien, XXIII. 275-6, Pl. IV. 25 (1873)<sup>1</sup>. *Gelechia sellae*, Chamb. Can. Ent. VI. 238 (1874)<sup>2</sup>. *Gelechia glandiferella*, Chamb. Can. Ent. IX. 14<sup>3</sup>, 24 (1877)<sup>4</sup>: Bull. U.S. G.G. Surv. IV. 144 (1878)<sup>5</sup>; Riley, Smith's List Lep. Bor. Am. 101. No. 5382 (1891)<sup>6</sup>.

*Hab.* UNITED STATES<sup>1-6</sup>, VII.<sup>1,2</sup>, VIII.<sup>1</sup>, IX.<sup>2</sup> West Indies—GRENADA (Mount Gay Estate, 300 ft., leeward side. 25-30 VIII.—(*H. H. Smith*).

Professor Riley (*l. c.* No. 6) sunk *Gelechia pallidochrella*, Chamb., as a synonym of this species, but under his number 5439 he retained it as a distinct species. Although it is obvious that *pallidochrella* is closely allied to *glandiferella*, I am not quite convinced that it is synonymous with it.

## 14. GELECHIA, Hb.

## 39. GELECHIA FLAMMULELLA, sp. n.

*Antennæ* pale brownish. *Palpi* long, recurved, overarching the head, the second and third joints of almost equal length and stoutness; whitish, banded with chestnut-brown above (three bands on the second and two on the apical joint). *Head* hoary-greyish. *Thorax* whitish ochreous; tegulæ shaded with brown. *Fore wings* brownish ochreous along the costal, tawny-brown along the dorsal half, without any dividing line, the two colours blending beyond the middle; from the costa at the base a dark chocolate-brown shade curves downwards and outwards, ending in a conspicuous dash along the lower edge of the cell before the middle, its upper edge narrowly margined with whitish throughout, a minute dot of the same dark colour at the lower angle of the cell; the whole wing suffused with a rich vinous gloss; cilia brownish ochreous. *Exp. al.* 13.5 mm. *Hind wings* broader than the fore wings; grey; cilia inclining to brownish ochreous. *Abdomen* shining, yellowish grey; with a fuscous spot on the sides of each segment beneath. *Legs* with the hind tibiæ hairy above; shining, whitish with a slight ochreous tinge, two or three spots on the outer sides of the tibiæ; the two anterior pairs of legs are whitish, with numerous brownish fuscous bands.

*Type*, ♂ Mus. Hedemann.

*Hab.* West Indies—St. THOMAS, 6-11 III. (*Gudmann, Hedemann*). Two specimens.

## 40. GELECHIA PERSPICUA, sp. n.

*Antennæ* with the basal joint very long and slender; dark brown, faintly annulated with whitish ochreous. *Palpi* very long, recurved, slender, the apical joint as long as the second; dark brown, mottled



with whitish ochreous. *Head* whitish, mottled with dark brown. *Thorax* dark brown, with faint whitish specklings at the tips of the scales; a silvery spot behind at the base of the abdomen. *Fore wings* dark brown, much mottled with whitish ochreous, mingled with iridescent green reflections; the paler colouring does not extend to the base but only to the sinuate oblique outer edge of a strongly-marked dark basal patch, the green metallic reflections being especially noticeable beyond its outer margin; below the middle of the costal margin is a small ocelloid spot with a dark brown centre, and the pale upper margin is preceded by a smaller one and followed by a third spot a little more distant from it, which forms the outer extremity of a dark brown shade; three patches of raised whitish-ochreous scales, the first on the disc before the middle, and two below the disc almost reaching the dorsum, the one before the other behind the middle; the apical portion of the wing is much mottled and contains a paler costal patch at one-fourth from the apex; cilia dark brown, at the apex mottled with whitish ochreous and tending to dull grey at the tornus. *Exp. al.* 13 mm. *Hind wings* very transparent, the veins indicated by greyish brown, the intermediate spaces except at the apex with bright steel-blue iridescence; cilia brownish grey. *Abdomen* greyish brown. *Hind legs* dark brown, spotted and banded with whitish ochreous.

*Type*, ♂ Mus. Gudmann.

*Hab. West Indies*—HAYTI (Cap Haïti, 18 V., Gudmann). Unique.

This species has somewhat the appearance of *Xenolechia humeralis*, Z.

#### 41. GELECHIA TRANSLUCIDA, Wlsm.

*Bryotropha translucida*, Wlsm. Pr. Z. Soc. Lond. 1891, 520, 545 (1892)<sup>1</sup>.

*Hab. West Indies*—DOMINICA<sup>1</sup>; ST. VINCENT<sup>1</sup>; GRENADA (Balthazar, 250 ft., windward side, 27 IV.; Mount Gay Estate, 300 ft., leeward side, 3-10 IX.—H. H. Smith).

In the original description, by a clerical error, the type was recorded as a ♀; it is a ♂.

#### 42. GELECHIA SPHENOPHORA, sp. n.

*Antennae* brownish grey. *Palpi* brownish fuscous; apical joint with a pale ochreous spot at its apex. *Head* and *thorax* brownish grey. *Fore wings* olive-brown, inclining to ferruginous at the base, the lighter basal patch is bounded externally by an oblique cuneiform ochreous streak, tending outwards from the costa at one-fifth from the base and reaching to the fold; a small ochreous spot lies at the end of the discal cell, and a larger, rather paler, costal spot at the commencement of the costal cilia; around the termen are four or five ill-defined pale ochreous spots before the commencement of the olive-brown cilia. *Exp. al.* 10 mm. *Hind wings* blue-grey; cilia brownish grey. *Abdomen* brownish grey. *Legs* whitish

ochreous, obliquely banded on the tibiæ and broadly annulated on the tarsi with brownish grey.

*Type*, ♂ ♀ Mus. Wlsm.

*Hab. West Indies*—GRENADA (Mount Gay Estate, 300 ft., leeward side, 1–5 X.; Balthazar, 250 ft., windward side, 5 IV.–8 V.—*H. H. Smith*). Four specimens.

#### 43. GELECHIA CROCIPUNCTELLA, Wlsm.

*Lita crocipunctella*, Wlsm. Pr. Z. Soc. Lond. 1891, 520–1, 546 (1892)<sup>1</sup>.

*Hab. West Indies*—ST. VINCENT<sup>1</sup>.

#### 44. GELECHIA LEUCOCEPHALA, sp. n.

*Antennæ* dark fuscous. *Palpi* white, the second joint with a single dark spot at its base; apical joint with two dark annulations, the first at the base, the other just before the apex. *Head* and face white. *Thorax* pale ochreous; tegulæ brownish fuscous. *Fore wings* pale ochreous, with dark brownish-fuscous mottlings or ill-defined patches; the first at the base reaching the costa, but not the dorsum, is connected narrowly on the costa and along the fold with a second, which is larger and extends nearly to the middle of the wing but does not cross the fold, this is also narrowly connected along the costa with a smaller costal patch at two-thirds from the base, a few dark fuscous scales lying at the end of the cell below it; cilia pale ochreous, some dark fuscous scaling lying at their base along the termen and apex. *Exp. al.* 10 mm. *Hind wings* pale shining grey; cilia pale greyish ochreous. *Abdomen* pale ochreous. *Legs* whitish ochreous.

*Type*, ♂ Mus. Gudmann.

*Hab. West Indies*—ST. THOMAS, 6 III. (*Gudmann*). Unique.

#### 45. GELECHIA CAPITELLA, F.

n. syn. = *ROBUSTELLA*, Wkr.; n. syn. = *RIVULELLA*, Mschl.

*Alucita capitella*, F. Ent. Syst. III. (2) 330. No. 2 (1794)<sup>1</sup>.  
*Phalena (Alucita) capitella*, Turton, Syst. Nat. III. 379 (1806)<sup>2</sup>.  
*Gelechia robustella*, Wkr. Cat. Lp. Ins. B. M. XXIX. 597 (1864)<sup>3</sup>.  
*Gelechia rivulella*, Mschl. Ab. Senck. Nat. Ges. XV. 344, 354 (1890)<sup>4</sup>.  
*Gelechia robustella*, Wlsm. Pr. Z. Soc. Lond. 1891, 519, 545 (1892)<sup>5</sup>.  
*Gelechia rivulella*, Wlsm. Pr. Z. Soc. Lond. 1891, 519, 545 (1892)<sup>6</sup>.

*Hab. West Indies*—JAMAICA<sup>3,5</sup>; PORTORICO<sup>4,6</sup>; [ST. CROIX (? = "Americæ Insulis, Dr. Pflug"<sup>1</sup>), Wlsm.]; ST. THOMAS, 6 III.–5 IV. (*Gudmann*, *Hedemann*).

Bred by Baron von Hedemann, but the plant not identified. "It was bred from a very small plant growing on very dry sandy places, where also the moth was to be found in abundance" (*Hdm.*).

Fabricius obtained this species from Dr. Pflug, who died in St. Croix, which island is probably indicated by "in Americæ

Insulis." Fabricius's description is sufficiently good to leave little doubt that he had *robustella*, Wkr., before him. I have examined Walker's type, and consider Möschler's description of *rivulella* to refer to the same species.

#### 46. GELECHIA BOSQUELLA, Chamb.

n. syn. = *COSTIPUNCTELLA*, Mschl.

*Ecophora basquella*, Chamb. Can. Ent. VII. 92 (1875)<sup>1</sup>. *Gelechia basquella*, Chamb. Can. Ent. VII. 124 (1875)<sup>2</sup>. *Gelechia? bosquella*, Chamb. Bull. U.S. G.G. Surv. IV. 87, 142 (1878)<sup>3</sup>. *Gelechia (Bryotropha?) bosquella*, Wlsm. Tr. Am. Ent. Soc. X. 178 (1882)<sup>4</sup>. *Gelechia costipunctella*, Mschl. Ab. Senck. Nat. Ges. XV. 344, 354 (1890)<sup>5</sup>. *Gelechia bosquella*, Riley, Smith's List Lep. Bor. Am. 100. No. 5329 (1891)<sup>6</sup>. *Gelechia costipunctella*, Wlsm. Pr. Z. Soc. Lond. 1891, 519, 545 (1892)<sup>7</sup>.

*Hab.* UNITED STATES<sup>1-4, 6</sup>. **West Indies**—JAMAICA (Monteague, 1100 ft., XI., *Rendall*); PORTORICO<sup>5, 7</sup>; ST. CROIX, 23 IV. (*Hedemann*); ST. THOMAS, 10 IV. (*Gudmann*); GRENADA (Balthazar, 250 ft., windward side, 5-10 IV.—*H. H. Smith*).

Three specimens which cannot be separated from *bosquella* received from Texas, although like many of the insular forms they are slightly smaller. They also agree well with Möschler's description of *costipunctella*, and I have little doubt that he had this species before him.

#### 47. GELECHIA DONATELLA, Wkr.

*Gelechia donatella*, Wkr. Cat. Lp. Ins. B. M. XXIX. 596-7 (1864)<sup>1</sup>; Wlsm. Pr. Z. Soc. Lond. 1891, 519, 545 (1892)<sup>2</sup>.

*Hab.* **West Indies**—JAMAICA<sup>1, 2</sup>.

#### 48. GELECHIA EXCLARELLA, Mschl.

*Gelechia exclarella*, Mschl. Ab. Senck. Nat. Ges. XV. 343-4, 354 (1890)<sup>1</sup>; Wlsm. Pr. Z. Soc. Lond. 1891, 519, 545 (1892)<sup>2</sup>.

*Hab.* **West Indies**—PORTORICO<sup>1, 2</sup>.

#### 49. GELECHIA BINIVEIPUNCTATA, sp. n.

*Antennae* fuscous above, banded with white beneath, the annulations more widely separated towards the apex than on the stem. *Palpi*: apical joint as long as the second, the latter slightly roughened beneath; whitish, the second joint shaded externally at the base with fuscous, a fuscous spot at its apex; apical joint with two broad fuscous bands. *Head* and *thorax* cream-white, laterally shaded with brownish fuscous. *Fore wings* tawny brown, with two white costal spots, the first small at half the wing-length, the second larger at the commencement of the costal cilia; an ochreous band beginning at the base follows the dorsum to the end of the fold, where it terminates in a slight rounded projection above the fold; its upper edge is indented about the middle by a dark

tawny-brown spot, blending with the ground-colour above it; three shining steel-grey bands can be traced with the lens, the first commencing on the costa at one-fifth and tending obliquely outwards to the fold; the second, commencing at the first costal spot, runs almost straight to the fold, and slightly encroaches on the ochreous band beneath it; the third, slightly preceding the second costal spot at its lower extremity, reaches to the dorsum at the termination of the ochreous band; cilia tawny brown, with an admixture of steel-grey scales. *Exp. al.* ♂ 8; ♀ 10 mm. *Hind wings* steel-grey; cilia yellowish grey. *Abdomen* brownish grey. *Legs* pale cinereous; tarsi faintly spotted.

*Type*, ♂ ♀ Mus. Wlsm.

*Hab. West Indies*—GRENADA (Balthazar, windward side—H. H. Smith). Three specimens.

#### 50. GELECHIA POSTPALLESCENS, sp. n.

*Antennae* brownish fuscous with whitish annulations. *Palpi*: apical joint as long as the second joint; whitish, with a fuscous spot externally on the basal half of the second joint. *Head* and *thorax* creamy ochreous, the latter margined at the sides with brownish fuscous. *Fore wings* narrow; brownish fuscous, sparsely sprinkled with ochreous scales; a creamy-ochreous dorsal streak occupies one-third the width of the wing and runs from the base through the tornal cilia; a small creamy-ochreous costal spot lies at one-fourth from the apex, and a few pale ochreous scales are visible at the base of the brownish-fuscous terminal cilia. *Exp. al.* 9 mm. *Hind wings* and cilia grey. *Abdomen* brownish grey. *Legs* whitish ochreous; tarsi minutely spotted with fuscous.

*Type*, ♀ Mus. Wlsm.

*Hab. West Indies*—GRENADA (Balthazar, 250 ft., windward side, 15 IV.—H. H. Smith). Unique.

#### 51. GELECHIA JAMAICENSIS, sp. n.

*Antennae* creamy white, with greyish-fuscous annulations. *Palpi*: apical joint as long as the second joint, the latter slightly roughened beneath; cream-white, the second joint doubly barred with fuscous externally, the apical joint biannulate with fuscous. *Head* creamy white. *Thorax* pale ochreous, whitish anteriorly. *Fore wings* pale ochreous, with a slight admixture of creamy-white and some ferruginous shading; sprinkled and suffused with greyish fuscous above the fold and along the costa (especially on its outer two-thirds, where it extends to half the width of the wing), presenting a peppered or irrorated appearance; this irroration is continued around the termen and in the base of the greyish cilia; two dark ferruginous-brown ocellated spots before the middle of the wing, the first at the commencement of the outer third of the fold, the other above and very slightly beyond it (in some specimens these spots are hardly noticeable, while in others the upper one is preceded and followed by similar spots). *Exp. al.* 8 mm.



*Hind wings* and cilia brownish grey. *Abdomen* greyish ochreous. *Hind legs* creamy-whitish, with greyish-fuscous tibial shades and tarsal spots.

*Type*, ♂ ♀ Mus. Wlsm.

*Hab. West Indies*—JAMAICA (Kingston, VII. 1892—*T. D. A. Cockerell*). Seven specimens. "So abundant round the lamp in my house during the past week as to amount to a pest, getting into the drinking water, &c.," Ckrl. i. l. 18 VII. 1892.

## 52. GELECHIA GUDMANNELLA, sp. n.

*Antennæ* pale brownish cinereous. *Palpi* whitish cinereous, shaded externally. *Head* and *thorax* pale brownish cinereous. *Fore wings* pale brownish cinereous, sparsely speckled with black; on the cell before the middle is a minute elongate black streaklet, followed by a second in the same line with it at the end of the cell; a small black spot on the fold lies below the first streaklet, and on the costal and apical portion a few slender pale lines are traceable along the veins, but these are very inconspicuous; around the termen and apex minute groups of blackish scales mark the base of the cilia, through the upper portion of which runs a slender dark line, the cilia being otherwise scarcely paler than the ground-colour. *Exp. al.* 8–10 mm. *Hind wings* shining greyish; cilia paler, with a slight ochreous tinge; on the costal margin near the base appears a slight thickening of cuticle, with a small brownish-ochreous hair-pencil. *Abdomen* pale brownish cinereous. *Legs* whitish cinereous.

*Type*, ♂ Mus. Wlsm.

*Hab. West Indies*—SAN DOMINGO (Puerto Plata, 16 V.—*Gudmann*); ST. CROIX, 27 IV. (*Gudmann*); ST. THOMAS, bred from *Solanum*, 24–25 III. (*Gudmann*, *Hedemann*).

## 15. DIDACTYLOTA, Wlsm.

= § *Dactylota*, Snell.

## 53. DIDACTYLOTA BICOLOR, Wlsm.

*Didactylota bicolor*, Wlsm. Pr. Z. Soc. Lond. 1891, 522, 546 (1892)<sup>1</sup>.

*Hab. West Indies*—ST. VINCENT<sup>1</sup>.

## 16. POLYHYMNO, Chamb.

= *Copocercia*, Z.

## 54. POLYHYMNO LUTEOSTRIGELLA, Chamb.

= *Fuscostrigella*, Chamb.<sup>3</sup>

*Polyhymno luteostrigella*, Chamb. Can. Ent. VI. 247–8 (1874)<sup>1</sup>.  
*Polyhymno fuscostrigella*, Chamb. Can. Ent. VIII. 30–1 (1876)<sup>2</sup>.  
*Polyhymno luteostrigella*, Chamb. Bull. U.S. G.G. Surv. IV. 161 (1878)<sup>3</sup>; Jr. Cin. Soc. N.H. II. 198, 203, fig. 26 (1880)<sup>4</sup>; Beut.

Ent. Am. V. 37 (1889)<sup>5</sup>; Wlsm. Tr. Ent. Soc. Lond. 1891, 95, 96, Pl. VII. 78 (1891)<sup>6</sup>; Riley, Smith's List Lep. Bor. Am. 104, No. 5586 (1891)<sup>7</sup>.

*Hab.* UNITED STATES<sup>1-7</sup>, VIII.<sup>1</sup> **West Indies**—JAMAICA (Monteague, 1100 ft., XI.—*Rendall*); ST. THOMAS, 12 III.—2 IV. (*Gudmann, Hedemann*).

#### 55. POLYHYMNO LATERESTRIATA, sp. n.

*Antennæ* white, faintly shaded with greyish ochreous beyond the base. *Palpi* white. *Head* white. *Thorax* greyish; tegulæ white. *Fore wings* shining silvery white, the extreme apical portion bright orange: a very oblique brownish-grey costal streak, followed by a scarcely less oblique white one, runs through the orange space nearly to a conspicuous white-margined black spot at the apex, and is met by a more slender oblique streak from the dorsum, also followed by a parallel white streak, wider than the one above it, and nearly divided at its middle by a slender dark line reverting from the tornus; cilia on their upper half with a shining bronzy shade at their base and a grey line running through them obliquely downwards from the apex; on their lower half whitish. *Exp. al.* 10 mm. *Hind wings* whitish grey; cilia white, a reduplicated dark line running through them across the apex. *Abdomen* whitish, shaded with grey above, with a series of oblique lateral grey streaklets on either side; anal tuft whitish. *Legs* white; hind tarsi shaded and spotted with greyish fuscous.

*Type*, ♂ Mus. Wlsm.

*Hab.* **West Indies**—ST. THOMAS, 30 III.—10 IV. (*Hedemann*). Two specimens.

#### 56. POLYHYMNO SCIURELLA, sp. n.

*Antennæ* white. *Palpi* shining white. *Head* and *thorax* shining white. *Fore wings* shining bluish white, with an elongate bright orange patch preceding the apex and reaching the costa but not the dorsum; this is preceded by a slight greyish shade, which does not extend along its upper edge and is followed by a strong black apical spot; before and below the spot is an outwardly curved greyish shade, partly enclosing an elongate silver-white oblique streak along the tornus; alternate orange and greyish-fuscous lines diverge downwards from the apex through the upper half of the cilia, which are plain greyish white about the tornus. *Exp. al.* 8 mm. *Hind wings* pale blue-grey; cilia whitish grey, with two slender dark lines crossing them at the apex. *Abdomen* silvery, with a remarkably long and dense pale ochreous anal tuft in the male. *Legs*: hind tibiæ pale ochreous; tarsi white, the spurs tipped and the tarsi biannulate with greyish fuscous.

*Type*, ♂ Mus. Wlsm.

*Hab.* **West Indies**—ST. THOMAS, 22-24 III. (*Gudmann, Hedemann*). Three specimens.

## 57. POLYHYMNO? GODMANI, Wlsm.

*Polyhymno? godmani*, Wlsm. Pr. Z. Soc. Lond. 1891, 525, 546 (1892)<sup>1</sup>.

*Hab.* West Indies—SAN DOMINGO (Puerto Plata, 16 V.—Gudmann); ST. VINCENT<sup>1</sup>.

## 17. ANACAMPSIS, Crt.

= *TACHYPTILIA*, Hein., Stgr. & Wk., Meyr., &c.

The type of *Anacampsis* is *Tinea populella*, Cl., as specified by Curtis, Br. Ent., expl. Pl. 189 (1827). For many years this generic name has been separated from its type and used for the *anthyllidella* group, for which there is no justification, and *Tachyptilia*, Hein., which has usurped the place of the true *Anacampsis*, Curtis, must sink as its synonym.

## 58. ANACAMPSIS PLUMBEOLATA, sp. n.

*Antennæ* greyish. *Palpi* very slender, strongly recurved, smooth, the apical joint slightly longer than the second; greyish, with a black spot at their base externally. *Head* and *thorax* smooth; leaden grey. *Fore wings* shining, leaden grey, with five blackish spots—one on each side of the fold near its base, one resting on the middle of the fold, with another immediately above and slightly beyond it, the fifth at the end of the cell; a scarcely perceptible outwardly angulated paler band crosses the wing at one-fourth from the apex, terminating in a white spot at the commencement of the costal cilia, whence a row of blackish spots extends around the apex and termen; cilia pale leaden grey. *Exp. al.* 10.5 mm. *Hind wings* broader than the fore wings; brownish grey, cilia the same. *Abdomen* brownish grey. *Legs* whitish ochreous.

*Type*, ♂ Mus. Hedemann.

*Hab.* West Indies—ST. CROIX, 4 V. (Hedemann). Unique.

## 59. ANACAMPSIS CORNIFER, sp. n.

*Antennæ* greyish ochreous, faintly annulated with fuscous. *Palpi* slender, curved, the second joint comparatively short, closely clothed; whitish, with a distinct black patch on its outer side covering the basal two-thirds; apical joint slender, naked, twice the length of the second, yellowish white. *Head* and *thorax* greyish ochreous. *Fore wings* greyish ochreous, indistinctly speckled with fuscous, a black dot at the extreme base of the costa, two fuscous dots in the fold, two on the discal cell, a slight fuscous costal shade above the end of the cell, followed by a pale ochreous spot, a few fuscous scales lying around the apex and termen; there is a slight greyish suffusion across the middle of the wing, and beyond it from the pale costal spot a curved band, paler than the ground-colour, is indistinctly traceable across the wing; cilia greyish ochreous. *Exp. al.* 10–11 mm. *Hind wings*

brownish grey, with slightly paler cilia. *Abdomen* and *legs* brownish grey.

*Type*, ♂ Mus. Hedemann.

*Hab. West Indies*—ST. CROIX, 5–12 V. (*Gudmann, Hedemann*); ST. THOMAS, 20 III.–18 IV. (*Gudmann, Hedemann*). Six specimens.

Bred by Mr. Gudmann at St. Croix from larvæ feeding on *Croton flavens*.

In a specimen, which I regard as undoubtedly a variety of this species, the discal and plical dots are not traceable, the wing-surface being merely speckled with fuscous. It appears to be somewhat variable.

#### 60. ANACAMPSIS MANGELIVORA, sp. n.

*Antennæ* greyish fuscous. *Palpi* long, recurved, slender, the apical joint much longer than the second; second joint smooth, clothed with closely-appressed black scales nearly to its apex, which is hoary; apical joint hoary, sprinkled with blackish scales. *Head* and *thorax* greyish fuscous, with hoary speckling. *Fore wings* greyish fuscous, with profuse hoary speckling; a dark fuscous elongate spot on the costa before the middle is preceded and followed by some hoary whitish scaling, of which there is also a slight patch at the commencement of the costal cilia; cilia hoary greyish. *Exp. al.* 14 mm. *Hind wings* brownish grey; cilia hoary grey. *Abdomen* brownish grey. *Legs* hoary greyish; hind tarsi annulate with dirty whitish.

*Type*, ♀ Mus. Gudmann.

*Hab. West Indies*—ST. THOMAS (bred from *Rhizophora mangel*, 21 IV.—*Gudmann*). Unique.

“Raupe zwischen zwei zusammengesponnenen, flach auf einander liegenden Blättern von *Rhizophora*; flach, Kopf sehr gross, dunkelbraun. Der Körper gegen das After abnehmend in Breite, Grundfarbe schmutzig grün, mit drei sehr feinen lilafarbenen Rückenlinien; Bauch hellgelb, 16-füssig; nach der letzten Häutung wird sie fleischfarbig, Bauch etwas heller, Kopf dunkelbraun.” (*Gudmann*).

#### 61. ANACAMPSIS QUINQUEPUNCTELLA, sp. n.

*Antennæ* cinereous, faintly banded with fuscous. *Palpi* with the second joint somewhat triangular; dark brownish fuscous externally, white within and along the outer edge at its extremity; apical joint slender, naked, more than twice as long as the second; white. *Head* and *thorax* dull fawn-grey. *Fore wings* dull fawn-grey, with five greyish-fuscous spots; one above and one beneath the fold at one-fourth, one on the fold at its outer third with another on the cell a little above and beyond it and a small one at the end of the cell; half-way between this and the apex is an outwardly angulated, pale cinereous, narrow fascia; a small dark fuscous spot lies at the extreme base of the costa; cilia pale cinereous, darker towards the apex. *Exp. al.* 10–12 mm. *Hind*



wings almost concolorous with the fore wings, but with a slight brownish-grey tinge; cilia pale cinereous. *Abdomen* shining, brownish grey. *Legs* pale cinereous.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—GRENADA (Balthazar, windward side, 5–15 IV.—H. H. Smith). Three specimens.

62. ANACAMPSIS LAPIDELLA, sp. n.

*Antennæ* stone-grey. *Palpi* whitish; second joint somewhat triangular, with a brownish-fuscous shade, not reaching to its outer margin, externally; apical joint long, slender, erect. *Head* and *thorax* brownish fuscous. *Fore wings* stone-grey, sprinkled with brownish-fuscous scales, with a series of three brownish-fuscous discal spots; the first diffused downwards across the fold at about one-fifth, the second a little beyond a smaller plical spot beneath it, the third at the end of the cell, of irregular shape and somewhat diffused; above and a little beyond this is a small costal spot preceding an inverted pale cinereous costal streak, which forms the upper extremity of an ill-defined, narrow, pale cinereous fascia crossing the wing nearly parallel with the termen; cilia ochreous, speckled along their base with brownish fuscous and with a line of the same colour running through them around the apex and also along the termen. *Exp. al.* 13 mm. *Hind wings* brownish cinereous; cilia somewhat paler, with a reduplicated shade-line running through them. *Abdomen* brownish cinereous. *Hind legs* whitish cinereous, shaded externally with brownish fuscous; hind tibiae densely hairy above.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—GRENADA (Balthazar, windward side, 15 IV.—H. H. Smith). Unique.

63. ANACAMPSIS INSULARIS, sp. n.

*Antennæ* greyish fuscous. *Palpi*: the second joint with a closely-appressed triangular tuft above; greyish fuscous; apical joint twice as long as the second, with two pale annulations. *Head* and *thorax* greyish fuscous. *Fore wings* greyish fuscous, with dirty whitish costal blotches reaching nearly half across the wing—one elongate, oblique, before the middle; another smaller, not oblique, on the middle; a third before the apex nearly meeting at its lower extremity a smaller one arising from a little beyond the tornus; some dark fuscous spots along the fold are connected by a dark line, and an irregular dark line along the outer part of the cell connects a small median spot with one a little below the apex; cilia bone-whitish, slightly spotted along their base. *Exp. al.* 8 mm. *Hind wings* greyish fuscous. *Abdomen* greyish fuscous. *Legs* greyish fuscous, spotted with bone-white.

*Type*, ♂ Mus. Hedemann.

*Hab.* West Indies—ST. THOMAS, 24 III. (Hedemann); ST. JAN, 27 III. (Gudmann). Two specimens.

## 64. ANACAMPSIS DESECTELLA, Z.

*Gelechia (Tachyptilia) desectella*, Z. Hor. Soc. Ent. Ross. XIII. 362-3, Pl. V. 122 (1877)<sup>1</sup>. *Tachyptilia desectella*, Wlsm. Pr. Z. Soc. Lond. 1891, 523, 546 (1892)<sup>2</sup>.

*Hab.* West Indies—CUBA<sup>1, 2</sup>.

## 18. ACOMPSIA, Hb.

Type, (*Tinea*) *cinerella*, Cl. (Dp.).

ACOMPSIA, Hb. Verz. bek. Schm. 409 (1826); Stph. Ill. Br. Ent., Haust. IV. 222-3 (1834); Dp. Hist. Nat. Lp. Fr. XI. 19 (1838) [*nec* Meyr. HB. Br. Lp. 633-4 (1895)].

= *BRACHYCROSSATA*, Hein. Schm. Deutsch. Tin. 323-4 (1870); Stgr. & Wk. Cat. 300 (1871).

= *RECURVARIA* (Hw.), Meyr. HB. Br. Lp. 606-7 (1895).

Westwood [Syn. Gn. Br. Ins. 110 (1840)], writing under the heading "*Acampsia*," cites *tinctella*, Hb. (214), as the type. Staudinger and Wocke refer Hübner's figure of *cinerella* (173=†137 Stgr.) to Clerck's species of this name; but it certainly looks more like an *Ecophora*, and Westwood may have been justified in considering it to be the same species as *tinctella*, Hb. (214), otherwise *tinctella* could not be a possible type of *Acompsia*, not being cited by Hübner. In either case Westwood's specification is inadmissible, being subsequent to Duponchel's citation of *cinerella*, Cl. (= *ardeliella*, Hb. 437), as the type of Hübner's genus *Acompsia*. Haworth's genus *Recurvaria* was not published until 1828, and *Acompsia*, Hb. (1826), is therefore entitled to precedence. The fourth part of Haworth's Lp. Br., pp. 513-609, is usually considered to have been published in 1829, but the completed work is reviewed, Mag. N. H. I. 348-9 (September 1828).

*Brachycrossata*, Hein., must of course sink as a synonym whichever name is used for this genus; and there appears to be no justification for Meyrick's use of *Acompsia* for the *Ecophora* of Staudinger and Wocke's Catalog (HB. Br. Lp. 633-4), nor for the employment of *Recurvaria*, Hw. (in lieu of *Acompsia*, Hb.), for *Brachycrossata*, Hein.

## 65. ACOMPSIA ANGULIFERA, sp. n.

*Antennæ* greyish cinereous. *Palpi* smooth, slender, recurved; hoary grey, with a minute dark spot above near the apex. *Head* and *thorax* hoary greyish. *Fore wings* hoary greyish, with slight greyish-fuscos speckled shading; at the base of the costa is a small elongate blackish spot; on the fold at one-fourth from the base is a blackish transverse spot, followed by a smaller length-spot in the fold; at the middle of the costa is an outwardly oblique greyish fuscous shade, mixed with some chestnut scales, terminating in a slender curved line on the outer end of the cell; before the apex is a slender hoary whitish transverse fascia, slightly angulated outwards on the middle and preceded by a greyish-fuscous shade

mixed with some chestnut; the pale fascia is connected at each extremity with an internally dark margined pale line which passes around the base of the cilia, interrupted only at the extreme apex and forming a triangular pattern; a reduplicated slender fuscous and chestnut line runs through the hoary cilia along the termen. *Exp. al.* 9 mm. *Hind wings* and cilia leaden grey. *Abdomen* greyish. *Legs* hoary, speckled with greyish fuscous.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—ST. CROIX, 7 V.–11 V. (*Gudmann*, *Hedemann*); GRENADA (Balthazar, windward side, 5–27 IV.—*H. H. Smith*). Eight specimens.

Bred by Mr. Gudmann from a plant which was not identified.

#### 66. ACOMPZIA PSORICOPTERELLA, Wlsm.

*Brachycrossata psoricopterella*, Wlsm. Pr. Z. Soc. Lond. 1891, 523–4, 546 (1892)<sup>1</sup>.

*Hab.* West Indies—ST. VINCENT<sup>1</sup>.

#### 19. HELCYSTOGRAMMA, Z.

=*BRACHY-CROSSATA* (Hein.), *Sect. B*, Wlsm. Tr. Ent. Soc. Lond. 1891, 98–9.

#### 67. HELCYSTOGRAMMA OBSERATELLA, Z.

*Gelechia (Helcystogramma) obseratella*, Z. Hor. Soc. Ent. Ross. XIII. 371–3, Pl. V. 127 (1877)<sup>1</sup>. *Helcystogramma obseratella*, Wlsm. Pr. Z. Soc. Lond. 1891, 523, 546 (1892)<sup>2</sup>.

*Hab.* West Indies—Cuba<sup>1, 2</sup>.

#### 20. TRICHOTAPHE, Clem.

#### 68. TRICHOTAPHE TRIGONELLA, Wlsm.

*Trichotaphe trigonella*, Wlsm. Pr. Z. Soc. Lond. 1891, 523, 546 (1892)<sup>1</sup>.

*Hab.* West Indies—S. CROIX, 15 V. (*Gudmann*); ST. VINCENT<sup>1</sup>.

Bred by Mr. Gudmann, but the food-plant not determined.

#### 69. TRICHOTAPHE TEGULELLA, sp. n.

*Antennæ* whitish ochreous, annulated with umber-brown. *Palpi* much flattened laterally, smooth, second joint with closely appressed clothing; umber-brown, on their inner side brownish ochreous. *Head* and *thorax* pale umber-brown; *tegulae* conspicuously pale ochreous. *Fore wings* dark purplish fuscous, with an elongate blackish spot on the outer third of the fold, separating the dark upper portion of the wing from the narrow dorsal portion, which, below and beyond the fold, is throughout pale ochreous; a small white spot lies at the end of the cell and a larger white costal spot before the apex, this is connected with the tornus by a narrow broken line of ochreous scales; along the termen is a narrow blackish band preceded by a curved line of

white dots parallel with the margin and followed by the purplish-grey cilia. *Exp. al.* 14 mm. *Hind wings* greyish brown; cilia grey, with a dark dividing shade near the base. *Abdomen* greyish brown. *Legs* greyish brown, faintly spotted with whitish ochreous, paler on their inner sides throughout.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—GRENADA (Balthazar, windward side, 15 III.–10 IV.—H. H. Smith). Three specimens.

## 21. MALACOTRICHA, Z.

### 70. MALACOTRICHA ZINGARELLA, sp. n.

*Antennæ* nearly as long as the fore wing; greyish. *Palpi* rather long, slender, curved; the second joint with long hair-like scales above; white. *Head* subochreous above, face white. *Thorax* subochreous. *Fore wings* narrow, elongate, the costa depressed about the middle, apex somewhat rounded, termen very oblique; ochreous, mottled with brick-red and streaked with steel-blue, with three black dots along the termen; cilia steel-grey. (It is difficult to describe the exact distribution of the colours, the brick-red occurring between the ochreous spaces, also between some steel-blue lines that mark the course of the apical nervules and along the terminal margin separating the three black dots from the cilia; the steel-blue is especially noticeable about the costal portion of the wing, where it runs in slender lines through the brick-red and ochreous spaces.) *Exp. al.* 9 mm. *Hind wings* and cilia pale grey. *Abdomen* subochreous. *Legs* whitish.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—ST. CROIX, 1 V. (Gudmann); ST. THOMAS, 11–21 III. (Hedemann). Four specimens.

"The larva mines in the fleshy leaves of *Coccoloba uvifera*. Mr. Gudmann has bred this species in numbers" (Hedemann).

"Raupe 16-füssig, nach hinten zu stark zugespitzt, gelbgrün mit durchscheinenden Darmkanal, zwischen den Segmenten stark eingeschnürt. Kopf braun, rund, kann bis zur Hälfte in die Haut des ersten Segments eingezogen werden; Afterklappe mit dunklem Schild von der Farbe des Kopfes.

"Die Minen sassen meistens nur am Rande des Blattes und öfters sehr viele in demselben Blatte. Verpuppung in der Mine." (Gudmann.)

## 22. DREPANOTERMA, g. n.

(*δρεπάρον* = a scimitar; *τέρμα* = an end.)

*Type*, *Drepanoterma lacticaudellum*, Wlsm.

*Antennæ* as long as the fore wings, biciliate (1).

*Labial palpi* recurved, long, smooth, flattened, divergent; apical joint scarcely half the length of the second.

*Maxillary palpi* very short.

*Haustellum* long.

*Head* with appressed scales.



*Thorax* smooth.

*Fore wings* narrow, elongate, of approximately even width throughout, somewhat securiform, apex slightly uncate, termen oblique, tornus angular. *Neuration*: 11 veins (7 and 8 coincident), 2 and 3 stalked.

*Hind wings* trapezoidal, slightly broader than the fore wings, dorsum sinuate, tornus obtusely angular, not incised beneath the apex, costa straight, abdominal angle developed. *Neuration*: 8 veins, 6 and 7 connate, 3 and 4 from a short stalk, 5 approximated to 3+4.

*Abdomen* somewhat flattened, anal tuft rather strongly developed.

*Legs*: hind tibiæ somewhat roughly (but not thickly) clothed.

Allied to *Strobisia*, Clem., but easily separated by the length of the antennæ, the shape of the termen, and the longer palpi.

#### 71. DREPANOTERMA LACTICAUDELLUM, sp. n.

*Antennæ* dark fuscous, very faintly annulated; basal joint whitish beneath. *Palpi* bronzy brown, apical joint tipped with white. *Head* and *thorax* dark purplish. *Fore wings* shining ferruginous, the basal third transversely blotched and striated with dark purplish fuscous and dark ferruginous, the apex and termen also shaded with dark purplish fuscous and illuminated with steel-grey patches: cilia whitish ochreous, with dark grey streaks running through them (to the number of five or six), at the tornus purplish fuscous. *Eap. al.* 12 mm. *Hind wings* dark coppery grey with iridescent reflections at the base of the cell; cilia coppery grey. *Abdomen* dark purplish fuscous, anal tuft conspicuous, whitish ochreous. *Legs* shining creamy whitish, tarsi and tibiæ shaded with greyish.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—GRENADA (Chantilly Estate, 350 ft., windward side, 13 IV.—H. H. Smith). One specimen taken on the banks of a stream.

#### 23. MENESTA, Clem.

#### 72. MENESTA? CINEREOCERVINA, Wlsm.

*Gelechia cinereocervina*, Wlsm. Pr. Z. Soc. Lond. 1891, 519–20, 545 (1892)<sup>1</sup>.

*Hab.* West Indies—ST. VINCENT<sup>1</sup>.

The neuration of the fore wings of this species as recorded (*l. c.* 519) is erroneous. I find on a re-examination of the two original specimens that they have only eleven veins, not *twelve*, and therefore wish to amend my original description as follows:—

*Fore wings* with 11 veins (7 and 8 coincident), 7+8 approximated to 9, running to the costa.

With this correction *Gelechia cinereocervina* differs from *Menesta tortriciformella*, Clem., in having 6 and 7 of the hind wings connate instead of stalked, and in not having biciliate antennæ; but for the moment I am unwilling to separate them generically.

## 24. YPSOLOPHUS, F.

[It is doubtful whether this generic name is rightly employed, but not having concluded the study of its history I have adopted it in the sense in which it is used by Heinemann, Staudinger and Wocke, &c.]

## 73. YPSOLOPHUS MANELLUS, Mschl.

*Ypsolophus manellus*, Mschl. Ab. Senck. Nat. Ges. XV. 344-5, 354 (1890)<sup>1</sup>; Wlsm. Pr. Z. Soc. Lond. 1891, 525, 546 (1892)<sup>2</sup>.

*Hab.* West Indies—PORTORICO<sup>1,2</sup>.

## 74. YPSOLOPHUS RUSTICUS, Wlsm.

*Ypsolophus rusticus*, Wlsm. Pr. Z. Soc. Lond. 1891, 525-6, 546 (1892)<sup>1</sup>.

*Hab.* UNITED STATES—Texas<sup>1</sup>, 13 VI. West Indies—St. VINCENT<sup>1</sup>; GRENADA (Mount Gay Estate, 300 ft., leeward side, 25 VIII.-10 IX.—H. H. Smith).

## 75. YPSOLOPHUS PIPERATUS, Wlsm.

*Ypsolophus piperatus*, Wlsm. Pr. Z. Soc. Lond. 1891, 526, 546 (1892)<sup>1</sup>.

*Hab.* West Indies—S. THOMAS, 31 III.-9 IV. (*Gulmann*, *Hedemann*); ST. VINCENT<sup>1</sup>.

"Larva mining in the leaves of a *Solanca*" (*Hedemann*). "On a papilionaceous plant with pink cluster-flowers" (*Gulmann*).

## 76. YPSOLOPHUS INDIGNUS, Wlsm.

*Ypsolophus indignus*, Wlsm. Pr. Z. Soc. Lond. 1891, 526-7, 546 (1892)<sup>1</sup>.

*Hab.* West Indies—ST. CROIX, 4 V. (*Hedemann*); ST. THOMAS, 10 III. (*Gulmann*); ST. VINCENT<sup>1</sup>; GRENADA (Balthazar, 250 ft., windward side, 5-30 IV.—H. H. Smith).

## 77. YPSOLOPHUS JUVENTELLUS, sp. n.

*Antennæ* ochreous, delicately annulated with umber-brown. *Palpi* white on their inner sides, the triangularly-tufted second joint umber-brown externally to two-thirds of its length. *Head* and *thorax* whitish ochreous. *Fore wings* umber-brown, with a broad whitish-ochreous band extending from the base to the termen along the dorsal half of the wing, its upper edge indented at and beyond the middle by two slight projections of the darker ground-colour; three umber-brown spots on the termen above the tornus are followed by the whitish-ochreous cilia, through which runs an evenly curved line of umber-brown, giving the apex a rounded appearance; a small oblique white dot lies on the costa before the apex, the dorsum is slightly shaded with umber-brown. *Exp. al.* 9 mm. *Hind wings* and cilia bluish grey. *Abdomen* grey. *Legs*

whitish ochreous, shaded and banded on the tarsi with umber-brown.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—JAMAICA (Monteague, 1100 ft., XI.—Rendall). Unique.

78. *YPSOLOPHUS*? *STRATELLUS*, sp. n.

*Antennæ* biserrate towards the apex; fuscous, annulate with pale cinereous, basal and adjacent joints brownish ochreous. *Palpi* (missing). *Head* cinereous. *Thorax* leaden grey above, brownish ochreous at the sides, with two lateral ferruginous spots posteriorly. *Fore wings* brownish ochreous on the costal half, the dorsal half dark ferruginous blending to tawny fuscous; on the pale costal half the ground-colour blends and varies with many different tints, a shining leaden-grey suffusion along its lower edge reaching nearly to the apex is repeated near the base of the costa—the costa itself (especially on its outer half) becoming pale rusty brown rather than brownish ochreous; the dark dorsal half also varies in tone and colour, its upper edge (which although nearly straight is slightly indented a little beyond the middle) is rich reddish ferruginous throughout, blending to dark tawny fuscous along the dorsum and becoming even darker towards the termen and tornus; a leaden-grey line around the apex and termen is followed by the parti-coloured cilia, which are dark tawny grey on their dorsal half with three pale ochreous spots along their base and pale brownish ochreous on their costal half with rusty-brown spots near their base. *Exp. al.* 16 mm. *Hind wings* dark tawny grey, semitransparent with bluish reflections towards the base; cilia subiridescent bluish, or brownish grey. *Abdomen* bronzy grey. *Legs* brownish grey, with an æneous tinge externally.

*Type*, ♀ Mus. Wlsm.

*Hab.* West Indies—TRINIDAD (*F. W. Urich*). Unique.

The palpi are unfortunately missing in the type, but I have little doubt that it is a true *Ypsolophus* allied to *flavivittellus*, Clem., with which it agrees in neurulation and general appearance.

25. *LATHONTOGENUS*, g. n.

(*λαθών*=unknown; *γένος*=genus.)

*Type*, *Lathontogenus adustipennis*, Wlsm.

*Antennæ*  $\frac{3}{4}$ , uniserrate.

*Labial palpi* recurved, divergent; apical joint less than half as long as the second, acute; second joint laterally compressed, smooth beneath, clothed on the upper side towards its apex with a somewhat triangular tuft, which does not extend to the basal half.

*Maxillary palpi* distinct.

*Haustellum* rather short.

*Ocelli* obsolete.

*Head and thorax* smooth.

*Fore wings* narrow, elongate, apex not depressed, termen oblique and evenly rounded, not sinuate beneath apex, tornus not apparent. *Neuration*: 11 veins (2 and 3 coincident); 7 and 8 stalked out of 6, 7 to costa slightly before apex; 4 approximated to 2+3; 1 furcate at base.

*Hind wings* as broad as the fore wings; costa sinuate from before middle, clothed almost from the base with cilia of even length; strongly and angularly excavate beneath the produced apex, tornus rounded, dorsum straight, abdominal angle developed. *Neuration*: 8 veins; 3 and 4 connate or stalked, 5 approximated to 6, 6 and 7 somewhat approximated.

*Legs*: hind tibiae with long hairs above and shorter ones beneath.

Allied to *Mesophleps*, Hb., but differing in neuration and in the structure of the palpi. I have been unable to refer this form to any of the genera proposed by Chambers.

#### 79. LATHONTOGENUS ADUSTIPENNIS, sp. n.

*Antennæ* whitish ochreous, faintly annulated. *Palpi* whitish ochreous, the second joint reddish brown externally except the outer end of the fringe on its upper side. *Head and thorax* whitish ochreous. *Fore wings* whitish ochreous at the base and a little way along the costa (with the exception of a narrow fawn-brown line along the extreme margin from the base), blending into pale fawn-ochreous over the remaining wing-surface; an umber-brown shade extending from before the middle of the costa to the apex; three faint fawn-grey spots are visible, the first on the middle of the fold, the third at the end of the cell, and the second equidistant between them on the cell; cilia fawn-ochreous. *Exp. al.* 10-18 mm. *Hind wings* and cilia grey. *Abdomen* pale fawn-ochreous. *Legs* pale fawn-ochreous, tarsal joints transversely shaded.

*Type*, ♂ ♀ Mus. Wlsm.

*Hab.* West Indies—St. CROIX, 27 IV.-5 V. (*Gudmann, Hede-mann*); St. THOMAS, 11-19 III. (*Gudmann, Hedemann*); GRENADA (windward side, Balthazar, 250 ft., 15-27 IV.; leeward side, Mount Gay Estate, 300 ft., 25-30 VIII.—*H. H. Smith*).

The specimens from St. Thomas and St. Croix are uniformly smaller (10-13 mm.) than those from Grenada (14-18 mm.); but I consider them to be the same species.

### III. ŒCOPHORIDÆ.

#### 26. ETHMIA, Hb.

*Type*, *Tinea aurifluella*, Hb. (= *\*pyrausta*, Hb.).

ETHMIA, Hb. Verz. bek. Schm. 163 (1822?).

n. syn. = *PSECADIA*, Hb. (1826); = *ANESYCHIA*, Hb. (1826); = *DISTHYMNIA*, Hb. (1826); = *MELANOLEUCA*, Stph. (1829);



= *ÆDIA*, Dp. (1836) ; = *CHALYBE*, Dp. (1836) ; = *AZINIS*, Wkr. (1863).

80. *ETHMIA CONFUSELLA*, Wkr.

= *STRIGOSELLA*, Wkr.<sup>5</sup> ; n. syn. = *INGRICELLA*, Mschl.

*Hyponomeuta confusellus*, Wkr. Cat. Lp. Ins. B. M. XXVIII. 531 (1863)<sup>1</sup>. *Cryptolechia strigosella*, Wkr. Cat. Lp. Ins. B. M. XXIX. 710 (1864)<sup>2</sup>. *Psecadia ingricella*, Mschl. Ab. Senck. Nat. Ges. XV. 343, 354, (Pl.) fig. 19 (1890)<sup>3</sup>. *Psecadia (Cryptolechia) strigosa*, Ckrl. Jr. Inst. Jamaica, I. 33 (1891)<sup>4</sup>. *Psecadia confusella*, Wlsm. Pr. Z. Soc. Lond. 1891, 527, 546 (1892)<sup>5</sup>. *Psecadia ingricella*, Wlsm. Pr. Z. Soc. Lond. 1891, 527, 546 (1892)<sup>6</sup>.

*Hab. West Indies*—CUBA (*Tring Mus.*): JAMAICA<sup>4, 5, 6</sup>, 19–21 VII.; HAYTI (Port-au-Prince, excl. 6 VI.—*Gudmann*); SAN DOMINGO<sup>1, 2, 5</sup>; PORTORICO<sup>3, 6</sup>; ST. CROIX, 6 V. (*Gudmann*); DOMINICA<sup>5</sup>; GRENADA (windward side, Balthazar, 250 ft. 5–30 IV.; leeward side, Mount Gay Estate, 300 ft., 1–5 X.—*H. H. Smith*). COLOMBIA—Bogotá<sup>5</sup>.

81. *ETHMIA SUBSIMILIS*, sp. n.

*Antennæ* stout; dull greyish cinereous. *Palpi* smooth, recurved to the vertex, the apical joint shorter than the second; dirty whitish, with a greyish spot externally near the end of each joint. *Head* and *thorax* smoky whitish. *Fore wings* smoky whitish, with greyish-fuscous spots; a broken greyish-fuscous shade extends from near the base to beyond the middle of the costa, a series of spots and shades of a similar colour extending from before the middle of the costa to the dorsum beyond its middle in an outwardly curved and broken line; between this and the base are about ten greyish-fuscous spots irregularly scattered along and below the fold, two near the base on either side of the fold being somewhat darker than the others; beyond the fasciaform central shade are several ill-defined greyish-fuscous markings above and below the outer end of the cell, followed by a marginal series of about six rather darker spots not extending along the base of the costal cilia; a greyish-fuscous shade runs along the middle of the smoky-whitish cilia. *Exp. al.* 15 mm. *Hind wings* pale stone-grey, somewhat darkened towards their outer extremities; cilia smoky whitish. *Abdomen* stone-grey. *Hind tibiae* smoky whitish, somewhat speckled and shaded.

*Type*, ♂ *Mus. Wlsm.*

*Hab. West Indies*—JAMAICA, 17 VII. (*Cockerell*). Unique.

This species differs from *Ethmia confusella*, Wkr., in the shape of the fore wings, which are somewhat squarer at the apex; the series of marginal dots do not revert along the costa as in that species, and, moreover, the spots and shades, although of the same colour, are not conspicuously arranged longitudinally, which is one of the marked features of the numerous forms of that insect. In size it is, perhaps, even smaller than *ingricella*, Mschl., which I am compelled to regard as a small form of Walker's species.

82. *ETHMIA JOVIELLA*, sp. n.

*Antennæ* brownish cinereous. *Palpi* white, slightly dusky at the extreme apex. *Head* and *thorax* white; tegulæ with a black spot anteriorly. *Fore wings* white, with a slight brownish-cinereous shade along the costal portion; a large quadrate blackish spot at the base of the costa extends narrowly along the extreme margin to a black spot at one-sixth from the base; a second black spot lies a little before the middle of the wing at the upper edge of the cell, and there are three black spots below the fold, one at about one sixth, one at about one-half, and one below these two nearer to the first than to the second; just above the outer end of the fold opposite the tornus is another spot, less black, more inclining to fuscous; cilia white. *Exp. al.* 14 mm. *Hind wings* greyish brown; cilia white. *Abdomen* greyish brown, shaded with ochreous above at the base; anal tuft inclining to ochreous. *Legs* whitish, tarsi faintly mottled.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—GRENADA (Mount Gay Estate, 300 ft., leeward side, 1-5 X.—H. H. Smith). Unique.

83. *ETHMIA PAUCELLA*, Wkr.

*Hyponomeuta paucellus*, Wkr. Cat. Lp. Ins. B.M. XXVIII. 530-1 (1863)<sup>1</sup>. *Psecadia paucella*, Wlsm. Pr. Z. Soc. Lond. 1891, 527, 546 (1892)<sup>2</sup>.

*Hab.* West Indies—SAN DOMINGO<sup>1,2</sup>.

84. *ETHMIA NOTATELLA*, Wkr.

= *XANTHORRHOA*, Z.<sup>5</sup>

*Psecadia notatella*, Wkr. Cat. Lp. Ins. B.M. XXVIII. 536 (1863)<sup>1</sup>. *Psecadia xanthorrhoa*, Z. Hor. Soc. Ent. Ross. XIII. 234-6, Pl. III. 71 (1877)<sup>2</sup>; Btl. Ent. Mo. Mag. XIX. 107 (1882)<sup>3</sup>; Snell. Tijds. v. Ent. XXX. 65 (1887)<sup>4</sup>; Mschl. Ab. Senck. Nat. Ges. XV. 341, 354 (1890)<sup>5</sup>. *Psecadia notutella*, Wlsm. Pr. Z. Soc. Lond. 1891, 528, 546 (1892)<sup>6</sup>.

*Hab.* West Indies — SAN DOMINGO<sup>1,6</sup>; PORTORICO<sup>2,5,6</sup>; CURAÇAO<sup>4,6</sup>.

85. *ETHMIA ABRAXASELLA*, Wkr.

= *AUREOAPICELLA*, Mschl.<sup>3</sup>

*Psecadia abraxasella*, Wkr. Cat. Lp. Ins. B.M. XXX. 1016-7 (1864)<sup>1</sup>. *Psecadia aureoapicella*, Mschl. Ab. Senck. Nat. Ges. XV. 341-2, 354 (1890)<sup>2</sup>. *Psecudia abraxasella*, Wlsm. Pr. Z. Soc. Lond. 1891, 528, 546 (1892)<sup>3</sup>.

*Hab.* West Indies—CUBA (*Tring* Mus.); JAMAICA<sup>3</sup>, 17 VII.; SAN DOMINGO<sup>1,3</sup>; PORTORICO<sup>2,3</sup>.

86. *ETHMIA EXORNATA*, Z.

*Psecadia exornata*, Z. Hor. Soc. Ent. Ross. XIII. 238-40, Pl. III. 73 (1877)<sup>1</sup>; Wlsm. Pr. Z. Soc. Lond. 1891, 528, 546 (1892)<sup>2</sup>.

*Hab.* West Indies—CUBA<sup>1,2</sup>. PERU—Chanchamayo<sup>1,2</sup>.

87. *ETHMIA GELIDELLA*, Wkr.

*Tamarrha gelidella*, Wkr. Cat. Lp. Ins. B.M. XXIX. 817 (1864)<sup>1</sup>. *Psecadia gelidella*, Wlsm. Pr. Z. Soc. Lond. 1891, 528, 546 (1892)<sup>2</sup>.

*Hab. West Indies*—JAMAICA<sup>1,2</sup>.

88. *ETHMIA KIRBYI*, Mschl.

*Psecadia kirbyi*, Mschl. Ab. Senck. Nat. Ges. XV. 342-3, 354 (1890)<sup>1</sup>; Wlsm. Pr. Z. Soc. Lond. 1891, 528, 546 (1892)<sup>2</sup>.

*Hab. West Indies*—PORTORICO<sup>1,2</sup>.

## IV. BLASTOBASIDÆ.

## 27. BLASTOBASIS, Z.

Type, *Æcophora (Scythris) phycidella*, Z.

BLASTOBASIS, Z. Lin. Ent. X. 171 (1855); Hein. Schm. Deutsch. Tin. 387 (1870).

Zeller separated *phycidella*, Z., and *roscidella*, Z., from *Butulis* under the name *Blastobasis*, but giving only a brief indication of its characters. Heinemann constituted *phycidella* the type, and described the genus in detail, but with hardly sufficient precision for comparison with other genera now known to occur. It may be well to indicate the characters peculiar to the genus *Blastobasis*, remarking that those species which have been placed in it in the North American lists do not conform in neururation.

*Antennæ*: ♂ with pecten, strongly notched beyond the basal joint, unilobate  $\frac{1}{3}$ .

*Labial palpi* recurved, of approximately equal thickness throughout, second joint scarcely longer than the apical.

*Maxillary palpi* short, projecting.

*Haustellum* long, well developed.

*Head and thorax* smooth.

*Fore wings* elongate, lanceolate, somewhat widened at the base, acutely pointed. *Neuration*: 12 veins, 7 and 8 stalked, 7 to costa.

*Hind wings* with abdominal angle strongly developed, thence evenly tapering to the subacute apex, costa much straighter than dorsum. *Neuration*: 7 veins (4 absent); 5 and 3 stalked (sometimes connate).

*Abdomen* somewhat flattened.

*Legs*: hind tibiæ hairy above.

## 89. BLASTOBASIS ARGILLACEA, sp. n.

*Antennæ* fawn-grey (a pecten on the basal joint beneath). *Palpi* smooth, evenly curved; fawn-grey. *Head* fawn-grey. *Thorax* fawn-grey, with a slight brownish tinge. *Fore wings* fawn-grey, with a brownish suffusion and some greyish-fuscous mottling around the apex and apical margin, a small blackish spot on the cell a little before and above the middle of the wing, from which

an ashy zigzag shade runs to the dorsal margin in the form of the letter **Z**; two similar spots lie at the end of the cell, the upper one in the same line as the first, the lower one a little beyond and below it; cilia dust-grey. *Exp. al.* 14 mm. *Hind wings* pale brownish grey; cilia with a slight ochreous tinge. *Abdomen* brownish grey, the anal tuft ochreous. *Legs* cinereous.

*Type*, ♀ Mus. Wlsm.

*Hab.* West Indies—ST. CROIX, 7 V. (*Gudmann*); ST. THOMAS, 15 III.–12 V. (*Gudmann*, *Hedemann*). Five specimens.

Bred by Baron von Hedemann from larvæ feeding in the flowers of a *Bisonia*. All the specimens are females, but I have little doubt that the reception of the male will prove that they are referred rightly to this genus.

#### 90. BLASTOBASIS GRENADENSIS, sp. n.

*Antennæ* pale cinereous. *Palpi* pale cinereous, shaded externally with fuscous. *Head* and *thorax* greyish, with a slight ochreous tinge. *Fore wings* smoky greyish, paler at the base, the darker shading inclining to form longitudinal lines on the outer half of the wing; with the usual three spots dark fuscous, the first a little above and before the middle, the two outer corresponding to the apical and tornal angles of the cell; cilia at tornus inclining to ochreous, about apex darker. *Exp. al.* ♂ 12; ♀ 15 mm. *Hind wings* greyish, with a slight bronzy sheen; cilia inclining to ochreous. *Abdomen* greyish fuscous; anal tuft paler. *Legs* greyish fuscous, the long hairs on the hind tibiæ inclining to ochreous.

*Type*, ♂ ♀ Mus. Wlsm.

*Hab.* West Indies—DOMINICA (*Druce*); GRENADA (Balthazar, 250 ft., windward side, 5 IV.–4 V.; Mount Gay Estate, 300 ft., leeward side, 25–30 VIII.; 1–5 X.—*H. H. Smith*). Five specimens.

The specimen from Dominica is not in good condition, but it appears to belong to this species.

#### 91. BLASTOBASIS SUBOLIVACEA, sp. n.

*Antennæ* pale cinereous. *Palpi* cinereous, shaded with fuscous externally. *Head* and *thorax* cinereous, the latter slightly shaded with fuscous. *Fore wings* olive-grey with a slight greenish tinge, especially on the basal half, shading to brownish externally; a single black dot before and above the middle is followed by the usual two, the one at the apex and the other at the tornus of cell; costa narrowly inclining to ochreous; cilia greyish, with a slight ochreous tinge at tornus. *Exp. al.* 12 mm. *Hind wings* bronzy brownish, thinly scaled between the upper veins in the ♂, and causing the veins to appear darker, thus giving the wings a streaked appearance; cilia pale greyish ochreous. *Abdomen* brownish grey; anal tuft paler. *Legs* cinereous; hind tarsi faintly grey-spotted.

*Type*, ♂ Mus. Hedemann.

*Hab.* West Indies—ST. THOMAS, 7 III.–9 IV. (*Gudmann*, *Hedemann*). Two specimens.



92. *BLASTOBASIS TRIANGULARIS*, sp. n.

*Antennæ* pale fawn-ochreous. *Palpi* dark fuscous, the tips of the joints paler. *Head* cinereous; face slightly ochreous. *Thorax* dusky cinereous. *Fore wings* dusky cinereous; the costa narrowly subochreous throughout, the usual three spots almost obscured by the dusky ground-colour, but traceable in the ordinary positions—the first before and slightly above the middle, the other two corresponding to the apical and tornal angles of the cell (there is a slight sprinkling of scattered subochreous scales over the wing-surface in a bred specimen); cilia cinereous, with a slight ochreous tinge. *Exp. al.* 10–12 mm. *Hind wings* thinly scaled between the upper veins in the ♂; brownish fuscous, with a faint purplish gloss; cilia inclining to ochreous. *Abdomen* brownish fuscous; anal tuft ochreous. *Legs* cinereous; hind tarsal joints inclining to ochreous.

*Type*, ♂ Mus. Hedemann; ♀ Mns. Gudmann.

*Hab. West Indies*—ST. THOMAS, 11 III.–15 IV. (*Gudmann, Hedemann*). Two specimens.

Bred by Baron von Hedemann from a black larva feeding on a low plant which was not identified.

The ♀ has the hind wings much paler and less marked, and of a greyer tinge; the anal tuft is ochreous, as in the ♂.

93. *BLASTOBASIS GRACILIS*, sp. n.

*Antennæ* and *palpi* bone-colour, the latter slightly shaded externally. *Head* and *thorax* bone-colour. *Fore wings* bone-colour, with a slight vinous tinge, sparsely sprinkled and mottled with pale brownish fuscous; the usual three dots are fairly conspicuous, but the first of these, scarcely before the middle, is preceded by a slight indication of another spot immediately above the middle of the fold; the termen shows a very faint indication of a broken fuscous line; cilia bone-grey. *Exp. al.* 11 mm. *Hind wings* shining pale bone-grey; cilia with a slight vinous gloss. *Abdomen* bone-grey; anal tuft bone-colour. *Legs* pale cinereous; hind tibiae slightly shaded externally.

*Type*, ♂ ♀ Mus. Wlsm.

*Hab. West Indies*—GRENADA (Balthazar, 250 ft., windward side, 5–27 IV.—*H. H. Smith*). Four specimens.

28. *PIGRITIA*, Clem.94. *PIGRITIA* ? *BIATOMELLA*, sp. n.

*Antennæ* stoutish, greyish ochreous, the basal joint with a thick tuft of mixed black and ochreous scales beneath. *Palpi* fuscous, sometimes ochreous at the junction of the second and terminal joints, internally pale ochreous. *Head* ochreous, much mixed with black. *Fore wings* smoky at the base, pale greyish ochreous beyond, more or less suffused with fuscous, with a small black dot at the end of the cell, a second near the dorsum immediately below it; cilia pale greyish. *Exp. al.* 9 mm. *Hind wings* and cilia pale

greyish. *Abdomen* greyish; anal tuft pale ochreous. *Legs* pale ochreous.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—ST. THOMAS, 15 III.–14 IV. (*Gudmann*, *Hedemann*). Eight specimens.

#### 95. *PIGRITIA MEDIOCRIS*, sp. n.

*Antennae* greyish, with a pecten at the base in the ♂. *Palpi* very slender, recurved, greyish, with whitish lines along them above and beneath. *Head* grey. *Thorax* and *fore wings* olivaceous ochreous, the latter with a few greyish-fuscous scales sprinkled over the dorsum and the outer end of the cell; with a narrow line of the same immediately below the costa reaching from the base to half the wing-length, a line of similar scales runs along the termen, sprinkling the paler cilia; with a small dot before the anal angle. *Exp. al.* 8 mm. *Hind wings* and cilia pale grey. *Abdomen* pale olivaceous ochreous, tending to greyish posteriorly. *Legs* cinereous.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—ST. CROIX, 26 IV.–6 V. (*Hedemann*); ST. THOMAS, 12 III. (*Gudmann*). Six specimens.

#### 29. *AUXIMOBASIS*, Wlsm.

##### 96. *AUXIMOBASIS INSULARIS*, sp. n.

*Antennae* greyish; the basal joint with a closely-packed shield of scales. *Palpi* porrect, scarcely recurved, greyish fuscous externally, an ashy ring around the end of the second joint. *Head* ashy grey. *Thorax* greyish fuscous; the tegulae paler. *Fore wings* pale greyish fuscous, with an angular spot at the base of the costa, ochreous edged with dark fuscous; before the middle of the wing is an outwardly angulated dark fuscous band, and beyond the middle, at about one-third from the apex, a line of dark fuscous mottlings, forming a second band much less conspicuous than the first; cilia ashy grey. *Exp. al.* 12 mm. *Hind wings* pale grey; cilia with a slight ochreous tinge. *Abdomen* and *legs* ashy grey; anal tuft ochreous.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—ST. CROIX, 18 V. (*Pontoppidan*); ST. THOMAS, 6 III.–15 IV. (*Gudmann*, *Hedemann*).

This species differs from *variolata*, Wlsm., in the less attenuated form of the hind wings, which have also a more obtuse apex.

##### 97. *AUXIMOBASIS VARIOLATA*, sp. n.

*Antennae* with a distinct basal pecten; cinereous. *Palpi* on the outer sides brownish, with a pale band around the junction of the second and apical joints. *Head* ashy grey. *Thorax* pale brownish. *Fore wings* ashy grey, with pale brownish mottlings and dark fuscous spots and speckles, these latter consist of two ill-defined

spots, one on each side of the fold before its middle, the upper one further removed from the base than the lower; a larger ill-defined spot on the middle of the dorsum, with a smaller one on the costa a little before it, between these a black dot on the cell, followed by some black speckling and two smaller parallel black dots at the end of the cell; cilia ashy grey. *Exp. al.* 11–15 mm. *Hind wings* pale grey; cilia with a slight brownish tinge. *Abdomen* grey. *Legs* cinereous, banded at the sides with greyish fuscous.

*Type*, ♂ ♀ Mus. Wlsm.

*Hab.* West Indies—ST. CROIX, 8 VI. (*Pontoppidan*); ST. THOMAS, 11 III.–18 IV. (*Gudmann, Hedemann*). Twelve specimens.

This species differs from *insularis*, Wlsm., in the more acute and attenuated apex of the hind wings.

#### 98. AUXIMOBASIS PERSIMILELLA, Wlsm.

*Auximobasis persimilella*, Wlsm. Pr. Z. Soc. Lond. 1891, 534–5, 547, Pl. XLI. 9 a–c (1892)<sup>1</sup>.

*Hab.* West Indies—ST. VINCENT<sup>1</sup>.

#### 99. AUXIMOBASIS BREVIPALPELLA, sp. n.

*Antennae* cinereous, basal joint hoary. *Palpi* cinereous, stained with fuscous externally, except at the tips of the second and apical joints. *Head* and *thorax* hoary grey. *Fore wings* hoary grey, sprinkled with fuscous scales; an ill-defined pale fuscous band, slightly before the middle of the wing, is angulated outwardly on the fold and is diffused outwards, leaving the basal portion somewhat paler than the apical; the usual pair of fuscous dots are adjacent to the end of the cell (the first dot usual in these genera is not visible in all specimens); a slight broken fuscous shade follows the margin of the wing around the apex and base of the hoary speckled cilia. *Exp. al.* 12–13 mm. *Hind wings* shining brownish grey; cilia scarcely paler. *Abdomen* brownish grey. *Legs*: hind tibiae and tarsi cinereous, shaded externally with faint bands of fuscous.

*Type*, ♂ ♀ Mus. Wlsm.

*Hab.* West Indies—GRENADA (Mount Gay Estate, 300 ft., leeward side, 25–30 VIII.; 1–5 X.—*H. H. Smith*). Four specimens.

Scarcely distinguishable from *persimilella*, Wlsm., except by the slightly broader wings and by the distinctly shorter palpi.

#### 100. AUXIMOBASIS FLAVICILIATA, sp. n.

*Antennae* dirty whitish, the basal joint enlarged with a strong pecten. *Palpi* smooth, erect, the apical joint nearly as long as the second; hoary whitish. *Head* and *thorax* smooth; hoary whitish. *Fore wings* hoary white, minutely grey-speckled, without markings; cilia pale yellowish. *Exp. al.* 12 mm. *Hind wings* very pale

grey, with pale yellowish cilia. *Abdomen* yellowish grey. *Legs* whitish.

*Type*, ♂ Mus. Hedemann.

*Hab.* West Indies—ST. THOMAS, 21–23 III. (*Gudmann, Hede-*  
*mann*). Two specimens.

#### 101. *AUXIMOBASIS CONSTANS*, sp. n.

*Antennæ* smoky cinereous. *Palpi*: apical joint scarcely more than half as long as the second joint; hoary cinereous on their inner sides, with a smoky shade externally, except at the apex of the apical and second joints. *Head* and *thorax* griseous. *Fore wings* whitish, with minute smoky speckling; the costa near the base and along the middle with a smoky shade, which also somewhat suffuses the cilia to the apex; the usual three dots are small but clearly defined, the first before and slightly above the middle, the two outer corresponding to the apical and tornal angles of the cell; a series of less clearly defined dark smoky spots on the margin on either side of the apex defining the outline of the cilia; cilia with a slight ochreous tinge about the tornus. *Exp. al.* 10–12 mm. *Hind wings* shining yellowish grey; cilia also slightly tinged with ochreous. *Abdomen* greyish cinereous. *Legs* pale cinereous.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—ST. THOMAS, 9–27 III. (*Gudmann, Hede-*  
*mann*). Three specimens.

#### 30. *ICONISMA*, g. n.

(εἰκόνησμα=a copy.)

*Type*, *Iconisma macrocera*, Wlsm.

*Antennæ* with strong pecten, without a notch in ♂, fully as long as the fore wings, narrowed immediately beyond the basal joint and somewhat flattened and tæniaform beyond it.

*Maxillary palpi* short.

*Labial palpi* slender, projecting, apical joint slightly shorter than the second.

*Head* and *thorax* smooth.

*Fore wings* elongate-lanceolate, narrow at the base, somewhat acute. *Neuration*: 12 veins, 7 and 8 stalked, 7 to costa.

*Hind wings* with the abdominal angle well developed, narrow, tapering rapidly to an acute point. *Neuration*: 8 veins, 3 separate, 4 and 5 stalked.

*Abdomen* somewhat flattened.

*Legs*: hind tibiæ hairy above.

So far as neuration is concerned, the European species *Blastobasis anthophaga*, Stgr., should be placed in this genus; but the form of the antennæ differs materially in not possessing the tæniaform character which distinguishes the type, although it agrees with it in having no notch.



102. *ICONISMA MACROCERA*, sp. n.

*Antennæ* with the basal joint dirty whitish, brownish cinereous beyond. *Palpi* dull whitish, shaded with fuscous at the sides except at the tips of the second and apical joints. *Head* dull whitish. *Thorax* hoary whitish. *Fore wings* hoary whitish, with three elongate fuscous streaks, the first from the base running below the costa to one-third, the margin above it being also slightly shaded with fuscous; the second also from the base following the fold to the dorsum; the third along the outer portion of the cell, commencing slightly before the middle of the wing and ending with the cell; some scattered fuscous sprinkling around the margins extends into the cilia, which have a slight ochreous tinge except along the costa, where they are whitish. *Exp. al.* 10 mm. *Hind wings* pale greyish; cilia tinged with ochreous. *Abdomen* greyish ochreous. *Legs* pale cinereous.

*Type*, ♂ Mus. Hedemann.

*Hab. West Indies*—ST. THOMAS, 15 III.–8 IV. (*Gudmann, Hedemann*). Three specimens.

## V. XYLORYCTIDÆ.

31. *GLYPHIDOCERA*, Wlsm.103. *GLYPHIDOCERA AUDAX*, Wlsm.

*Glyphidocera audax*, Wlsm. Pr. Z. Soc. Lond. 1891, 531–2, 547, Pl. XLI. 8 a–c (1892)<sup>1</sup>.

*Hab. West Indies*—ST. VINCENT<sup>1</sup>.

104. *GLYPHIDOCERA DOMINICELLA*, sp. n.

*Antennæ* pale fawn-brown. *Palpi*, *head*, and *thorax* fawn-grey. *Fore wings* fawn-grey, sparsely sprinkled with olive-brown; with two olive-brown spots on the disc, one at its outer extremity, the other halfway between this and the base; cilia fawn-grey with a slight ochreous tinge. *Exp. al.* 15 mm. *Hind wings* and cilia brownish olivaceous. *Abdomen* brownish olivaceous. *Legs* scarcely paler than the hind wings.

*Type*, ♂ Mus. Wlsm.

*Hab. West Indies*—DOMINICA (Point Michell, 29 V.). Two specimens.

This species differs from *audax*, Wlsm., in having the base of the costa of the fore wings less abruptly arched, and in the hind wings being more opaque and having paler cilia.

105. *GLYPHIDOCERA RECTICOSTELLA*, sp. n.

*Antennæ* strongly notched in the ♂ beyond the basal joint, serrate towards the apex; ochreous beneath, shaded with greyish fuscous above. *Palpi* strongly recurved, laterally divergent; greyish fuscous. *Head* and face greyish fuscous. *Thorax* greyish

fuscous with a slight purplish tinge. *Fore wings* greyish fuscous with a slight purplish tinge; a very faint indication of a dark spot at the end of the cell; cilia the same. *Exp. al.* 23–25 mm. *Hind wings* and cilia greyish brown. *Abdomen* greyish brown. *Legs* greyish, spurs and tarsi slightly paler.

*Type*, ♂ ♀ Mus. Wlsm.

*Hab. West Indies*—GRENADA (Balthazar, 250 ft., windward side, 1 IV.–4 V.; Mount Gay Estate, 300 ft., leeward side, 25 VIII.–10 IX.—*H. H. Smith*). Seven specimens.

This species differs from *audax*, Wlsm., in the absence of a distinct humeral angle on the costa at the base of the fore wings. This seems to be also absent in the female of *audax*, and it is possible that this may turn out to be a characteristic of the females of both species, or that the single female of *audax* has been wrongly identified, but I have not sufficient material to decide this point.

### 32. ANTÆOTRICHIA, Z.

#### 106. ANTÆOTRICHIA SUFFUMIGATA, sp. n.

*Antennæ* smoky white. *Palpi* recurved, slender, apical joint nearly as long as the second; white. *Head* and face white. *Thorax* smoky white in front, paler posteriorly. *Fore wings* elongate, subovate; shining white, the extreme costa delicately shaded with smoky brown and also the dorsal third of the wing from the base below the fold and beyond it to the termen above the tornus; cilia white. *Exp. al.* 16–20 mm. *Hind wings* and cilia pale smoky greyish; ♂ with long brush of greyish hairs from base of costa. *Abdomen* smoky white. *Legs* white.

*Type*, ♂ ♀ Mus. Wlsm.

*Hab. West Indies*—GRENADA (Balthazar, 250 ft., windward side, 15 III.–30 IV.; Mount Gay Estate, 300 ft., leeward side, 1–5 X.—*H. H. Smith*). Six specimens.

#### 107. ANTÆOTRICHIA TIBIALIS, Z.

*Antæotricha tibialis*, Z. Hor. Soc. Ent. Ross. XIII. 307–9, Pl. III. 90 (1877)<sup>1</sup>.

*Hab. West Indies*—TRINIDAD (*Schaus, Urich*; Port of Spain, *Hart*). BRAZIL (?)<sup>1</sup>.

#### 108. ANTÆOTRICHIA GRISEANA, F.

= \* *WALCHIANA*, Z. (nec Cram.)<sup>8</sup>.

*Pyrallis griseana*, F. Ent. Syst. III. (2) 265. No. 96 (1794)<sup>1</sup> Turton, Syst. Nat. III. 352 (1806)<sup>2</sup>. *Stenoma griseanum*, Z. Is. 1839, 195<sup>3</sup>. *Antæotricha walchiana*, Z. Lin. Ent. IX. 391–3, Pl. III. 29–30 (1854)<sup>4</sup>. *Pyrallis griseana*, Z. Lin. Ent. IX. 393 (1854)<sup>5</sup>. *Antæotricha walchiana*, Wkr. Cat. Lp. Ins. B.M. XXIX. 773 (1864)<sup>6</sup>. *Antæotricha griseana*, Z. (partim) Hor. Soc. Ent. Ross. XIII. 315 (1877)<sup>7</sup>; Wlsm. & Drnt. Merton Rules 12 (1896)<sup>8</sup>.

*Hab.* West Indies ("Americæ meridionalis Insulis")<sup>1,2</sup>—TRINIDAD (*Schaus*). CAYENNE (*Mus. Wlsm.*). BRAZIL<sup>6</sup>—Cametá<sup>4</sup>.

The specimens which Zeller described in the 'Isis' as *Stenomame griseanum*, F.(?), and again in the 'Linnæa Entomologica' as *Antæotricha walchiana*, Cram., are before me. They are certainly not *walchiana*, Cram., which was redescribed by Walker as *Cryptoteuchia lativittella*. In the 'Horæ' Zeller revived Fabricius's name for still another species from Chiriqui with greenish markings towards the apex. If he were justified in doing this, then the species known as *walchiana* (Zeller, nec Cramer) would be nameless. Fabricius's description is hardly precise enough to enable one to identify a species of this group with certainty, but there appears to be no evidence to prove that Zeller was wrong in his first conception of *griseana*, F. Moreover I now record Zeller's original *griseana* from Trinidad, which agrees well with Fabricius's locality "Americæ meridionalis Insulis;" and as Zeller, in 1839, limited the name to this form, I think the concluding sentence of paragraph 15 of the Rules compiled by the German Zoological Society may be held to apply with the addition of the words in brackets: "In doubtful cases the decision of the author who makes the [*first*] separation [*or restriction*] shall be followed."

[I add the synonymy of the species not occurring in the West Indies, referred to above, and have proposed a new name for Zeller's latest conception of *griseana*, F.

ANTÆOTRICHIA WALCHIANA, Cram. & Stoll.

(nec WALCHIANA, Z.); n. syn. = LATIVITTELLA, Wkr.

*Phalæna* (*Tortrix*) *walchiana*, Cram. & Stoll, Pap. Exot. IV. 191, 252 (*Essai Syst. Lp.*), 27, Pl. 384. F. (1782)<sup>1</sup>. *Tortrix*? *walchiana*, Wkr. Cat. Lp. Ins. B.M. XXVIII. 325 (1863)<sup>2</sup>. *Cryptoteuchia lativittella*, Wkr. Cat. Lp. Ins. B.M. XXIX. 720-1 (1864)<sup>3</sup>.

*Hab.* VENEZUELA<sup>3</sup>; SURINAM<sup>1,2</sup>; BRAZIL<sup>3</sup> (*Espirito Santo*, *Schmidt*; *Corcorado*, *Schaus*; and *Sta. Catherina*, *Mus. Wlsm.*).

ANTÆOTRICHIA ZELLERI, Wlsm. & Drnt.

= \* *GRISEANA*, Z.<sup>2</sup>

*Antæotricha griseana*, Z. Hor. Soc. Ent. Ross. XIII. 315-6, Pl. IV. 95 (1877)<sup>1</sup>. *Antæotricha zelleri*, Wlsm. & Drnt. Merton Rules 12 (1896)<sup>2</sup>.

*Hab.* PANAMA—Chiriqui<sup>1</sup>.]

109. ANTÆOTRICHIA? SINUATA, F.

= § *DENTELLA*, F.<sup>2</sup>

*Alucita dentella*, F. Ent. Syst. III. (2) 343. No. 49 (1794)<sup>1</sup>.

*Ypsolophus sinuatus*, F. Sppl. Ent. Syst. 509. No. 20 (1798)<sup>2</sup>.

*Phalæna* (*Alucita*) *dentella*, Turton, Syst. Nat. III. 383 (1806)<sup>3</sup>.

"*dentella*. 49. *A. alis* obscure cinereis: *vitta media* dentata fusca.

"*Corpus parvum*, cinereum. *Alæ* obscure cinereæ *vitta lata*, interne dentata in medio *alæ*. *Pedes albi*.

"*Habitat* in Americæ Insulis, Dom. v. Rohr."<sup>1</sup> = West Indies<sup>1-3</sup>.

## 33. DIASTOMA, Mschl.

## 110. DIASTOMA SQUAMOSA, Wlsm.

*Diastoma squamosa*, Wlsm. Pr. Z. Soc. Lond. 1891, 524, 546 (1892)<sup>1</sup>.

*Hab.* West Indies—ST. VINCENT<sup>1</sup>.

## 34. ANADASMUS, g. n.

(ἀναδασμός = a division.)

Type, *Cryptolechia soraria*, Z.

*Antennae*  $\frac{2}{3}$ , basal joint somewhat enlarged, without pecten; ♂ biciliate (2).

*Labial palpi* strongly recurved, second joint thickened, with appressed scales beneath, apical joint shorter than the second.

*Maxillary palpi* well developed, appressed to the haustellum.

*Haustellum* thickly scaled.

*Head* with appressed scaling, side tufts spreading, margined with hairs posteriorly.

*Thorax* smooth.

*Fore wings*: costa arched at the base, thence almost straight to the slightly depressed and rounded apex, termen almost perpendicular, tornus rounded. *Neuration*: 12 veins, all separate, 8 to costa, 5 approximated to 4, and 6 to 7, 2 from near lower angle.

*Hind wings* broader than the fore wings, costa hardly depressed beyond middle (without long hair tuft in ♂), apex rounded, slightly sinuate beneath apex, thence evenly rounded; cilia short. *Neuration*: 8 veins, 6 and 7 very closely approximated towards origin, 3 and 4 almost connate, 1 *b* furcate at base.

*Abdomen* rather stout.

*Legs*: hind tibiae clothed with short rough scales.

Closely allied to *Gonioterma*, Wlsm., from which it differs in vein 8 of the fore wings attaining the costa.

## 111. ANADASMUS IMMUNDUS, Z.

*Cryptolechia immunda*, Z. Lin. Ent. IX. 360–1 (1854)<sup>1</sup>; Wkr. Cat. Lp. Ins. B.M. XXIX. 711 (1864)<sup>2</sup>; Z. Hor. Soc. Ent. Ross. XIII. 259 (1877)<sup>3</sup>.

*Hab.* West Indies—TRINIDAD (*Schaus*). BRAZIL<sup>1,2</sup>.

## 112. ANADASMUS ALBANUS, F.

= § *LACTEELLA*, F.<sup>2</sup>; n. syn. = *TENERA*, Z.

*Tinea lacteella*, F. Ent. Syst. III. (2) 313. No. 116 (1794)<sup>1</sup>. *Pyralis albana*, F. Sppl. Ent. Syst. 476. No. 31–2 (1798)<sup>2</sup>. *Cryptolechia tenera*, Z. Lin. Ent. IX. 364–5 (1854)<sup>3</sup>, X. 153–4 (1855)<sup>4</sup>; Hor. Soc. Ent. Ross. XIII. 259, 263–4 (1877)<sup>5</sup>.

*Hab.* West Indies (= in Americæ Insulis)<sup>2</sup>. S. AMERICA<sup>1</sup>—PANAMA, Chiriqui<sup>5</sup>; VENEZUELA, La Guayra<sup>4</sup>; CAYENNE (*Mus*.



Wlsm.); BRAZIL—Pará<sup>3</sup> (*Mus. Wlsm.*); Santa Catherina (*Mus. Wlsm.*).

Fabricius probably changed the name *lacteella* to *albana* because Schiffermüller had already published a *Tinea lactella*. Zeller (*l. c.* No. 3) considered *tenera* distinct from Fabricius's species, principally from the antennæ not agreeing with the original description (*l. c.* No. 1), but this was emended (*l. c.* No. 2); and Zeller, while not admitting that *tenera* was a synonym of *albana* in the 'Horæ,' was evidently coming round to the opinion that his species was not distinct from that of Fabricius. I have a very large amount of material (mostly undescribed) belonging to this family, and the only species to which Fabricius's description can be applied is *tenera*, Z.; I am therefore not disposed to maintain these two names as representing distinct species.

### 35. GONIOTERMA, g. n.

(*γωνία* = angle; *τέρμα* = a boundary.)

Type, *Phalæna* (*Tortrix*) *burmanniana*, Cram. & Stoll.

*Antennæ*  $\frac{2}{3}$ , basal joint somewhat enlarged, without pecten; ♂ biciliate ( $1\frac{1}{2}$ ).

*Labial palpi* strongly recurved, second joint thickened with appressed scales beneath, apical joint shorter than the second.

*Maxillary palpi* well developed, appressed to the haustellum.

*Haustrillum* thickly scaled.

*Head* smooth, but with lateral hair-tufts often meeting above it.

*Thorax* smooth.

*Fore wings*: costa arched at the base, thence straight almost to the apex, which is slightly depressed and rounded, termen almost perpendicular, tornus rounded. *Neuration*: 12 veins all separate, 8 to termen below apex, 5 approximated to 4, and 6 to 7, 2 from near lower angle.

*Hind wings* broader than the fore wings, costa depressed beyond middle (without long hair-tuft in ♂), evenly rounded from the apex to the abdominal angle, cilia short. *Neuration*: 8 veins, 6 and 7 closely approximated, 3 and 4 separate but closely approximated, 1 b furcate at base.

*Abdomen* rather stout.

*Legs*: hind tibiae clothed with short rough scales.

Allied to *Anadasmus*, Wlsm., but differing in vein 8 of the fore wings attaining the termen.

### 113. GONIOTERMA ISABELLA, F. & R.

*Cryptolechia isabella*, F. & R. Reise Nov., Lp. Pl. 139. 24 (1875)<sup>1</sup>.

*Hab.* West Indies—TRINIDAD (*Schaus*). BRAZIL—Amazons<sup>1</sup>.

### 114. GONIOTERMA? PARVELLUM, F.

*Alucita parvella*, F. Ent. Syst. III. (2) 343-4. No. 50 (1794)<sup>1</sup>

*Tinea parvella*, F. Sppl. Syst. Ent. 500. No. 109 (1798)<sup>2</sup>. *Phaëna* (*Alucita*) *parvella*, Turton, Syst. Nat. III. 383 (1806)<sup>3</sup>.

"*parvella*. 50. *A.* alis obscure cinereis : maculis duabus costalibus fuscis.

"*Statura parva præcedentis. Alæ incumbentes, cinereæ, maculis duabus costalibus fuscis.*

"*Hab. in Americæ Insulis, Dom. v. Rohr.*"<sup>1</sup> = **West Indies**<sup>1-3</sup>.

This appears to be allied to *burmanniana*, Cram. & Stoll.

## VI. ELACHISTIDÆ.

### I. COLEOPHORINÆ.

#### 36. COLEOPHORA, Hb.

##### 115. COLEOPHORA PULCHRICORNIS, sp. n.

*Antennæ* white, beautifully ringed throughout with black ; basal joint not tufted. *Palpi* dusky whitish, shaded externally with fawn-colour ; second joint with a slight projecting point of scales beneath its apex. *Head* and *thorax* dull fawn-grey. *Fore wings* dull fawn ; with a whitish ochreous costal streak throughout, widening towards the apex, and including the costal cilia ; joining this from the end of the cell are three whitish-ochreous streaks following the veins ; along the cell from before the middle and extending a little beyond its outer end is a longitudinal streak composed of mixed whitish-ochreous and black scales running parallel with the costa ; beneath it, commencing at the base and terminating before the end of the fold, is a similar slender streak in which black predominates ; some whitish ochreous scales lie around the dorsum and termen at the base of the greyish cilia. *Exp. al.* 10 mm. *Hind wings* and cilia dark brownish grey. *Abdomen* brownish grey. *Legs* whitish.

*Type*, ♀ and case Mus. Wism.

*Hab. West Indies*—ST. CROIX, 5 V. (*Hedemann*) ; ST. THOMAS, 12 III.—15 IV. (*Gudmann, Hedemann*). Three specimens.

*Case* cylindrical, mouth bent over but not projecting beyond the level of its lower side, apex triangular, its three angles somewhat flattened, the whole dull greyish ochreous ; *long.* 13 mm.

Bred by Baron von Hedemann, but the plant not identified. The larva was found on stone fences by Mr. Gudmann.

This species belongs to the group of *troglydytella*, Dp. &c., and is very similar to some of the European species ; the mouth of the case is, however, more distinctly at a right angle to the case itself, and it is somewhat stouter in proportion to its length.

##### 116. COLEOPHORA PICTICORNIS, sp. n.

*Antennæ* stout, shorter than the fore wings ; white, with four greyish-fuscous bands towards the apex. *Palpi* somewhat long and slender, slightly recurved, smooth, apical joint slightly shorter

than the second; white. *Head* coppery fawn-brown, with a white line on either side running back from the base of the antennæ; face and tongue whitish ochreous. *Thorax* coppery fawn-brown. *Fore wings* coppery fawn-brown, with a shining white streak along the costa from the base to the costal cilia, the extreme costa edged with bright ochreous throughout, including the costal cilia; cilia coppery fawn-brown with a slight ochreous tinge. *Exp. al.* 10 mm. *Hind wings* brownish grey; cilia coppery fawn. *Abdomen* dark brownish grey, anal tuft subochreous. *Legs* pale cinereous, hind tibiæ somewhat clothed above.

*Type*, ♂ Mus. Wlsm.

*Hab. West Indies*—HAYTI (Port-au-Prince, 23 V., Gudmann); ST. THOMAS, 10 IV. (Hedemann); GRENADA (Balthazar, 250 ft., windward side, 15 IV.—H. H. Smith). Four specimens.

## II. BATRACHEDRINÆ.

### 37. PAMMECES, Z.

#### 117. PAMMECES LITHOCHROMA, sp. n.

*Antennæ* (broken), basal joint elongate, enlarged posteriorly, with a distinct long pecten; stone-white. *Palpi* long and strongly recurved, laterally ascending, second joint rather strongly tufted above at its end; apical joint long and thin, slightly shorter than the second joint; pale stone-grey sprinkled with blackish atoms. *Head* and *thorax* smooth; stone-grey. *Fore wings* stone-grey, sprinkled with blackish atoms, especially along the costa; a minute black spot on the middle of the fold, another on the dorsum at its outer end, the latter somewhat elongate; a third minute elongate black spot lies at the end of the cell, and a few black dots around the termen at the base of the stone-grey cilia. *Exp. al.* 16 mm. *Hind wings* pale grey; cilia stone-grey. *Abdomen* stone-grey. *Legs* stone-whitish; hind tibiæ hairy above.

*Type*, ♂ Mus. Gudmann.

*Hab. West Indies*—SAN DOMINGO (Puerto Plata, 16 V.—Gudmann). Unique.

The antennæ were between two and three times the length of the fore wings (Gudmann).

#### 118. PAMMECES? PALLIDA, sp. n.

*Antennæ* longer than the fore wings, with a distinct pecten on the basal joint; dirty white. *Palpi*: the second joint with a sloping brush above at its end, apical joint slender, naked, less than half the length of the second; white, with a smoky shade on the second joint externally. *Head* and *thorax* white. *Fore wings* shining white, with two or three small fuscous spots along the fold, and four minute fuscous dots on the costa along the base of the smoky white cilia. *Exp. al.* 13 mm. *Hind wings* shining, very pale

grey; cilia dull smoky white. *Abdomen* whitish. *Legs* white; hind tibiae hairy above.

*Type*, ♂ Mus. Hedemann.

*Hab. West Indies*—ST. THOMAS, 10 IV. (*Hedemann*). Unique.

This species differs from *albivittella*, Z., and *lithochroma*, Wlsm., in the much shorter apical joint of the palpi.

### 38. SYNTOMACTIS, Meyr.

[Meyr. Tr. N. Z. Inst. XXI. 173 (1889).]

#### 119. SYNTOMACTIS? CERVINELLA, sp. n.

*Antennae* longer than the fore wings; pale fawn-ochreous. *Palpi* somewhat recurved, slender, smooth, the apical joint nearly as long as the second; pale fawn-ochreous. *Head* and *thorax* pale fawn-ochreous. *Fore wings* very narrow, elongate; pale fawn-ochreous, speckled with brownish fuscous in a line along the fold with another above it, as well as around and about the apical portion of the wing; the more conspicuous dots being one at the outer third of the fold, one at the end of the cell, and one in the same line beyond it; cilia pale fawn-ochreous. *Exp. al.* 12 mm. *Hind wings* and cilia pale yellowish grey. *Abdomen* shining pale fawn-ochreous. *Legs* scarcely paler, unspotted; hind tibiae with long pale hairs above.

*Type*, ♂ Mus. Hedemann.

*Hab. West Indies*—ST. CROIX, 24 IV. (*Gudmann*); ST. THOMAS, 11 III. (*Hedemann*). Two specimens.

This species appears to differ from *Syntomactis*, Meyr., only in its longer antennae. I am not at present disposed to create a new genus for its reception. *Zarathra* differs in its very much longer palpi.

### 39. BATRACHEDRA, Stn.

#### 120. BATRACHEDRA ALBISTRIGELLA, Mschl.

*Batrachedra albistrigella*, Mschl. Ab. Senck. Nat. Ges. XV. 345, 354 (1891)<sup>1</sup>; Wlsm. Pr. Z. Soc. Lond. 1891, 538, 548 (1892)<sup>2</sup>.

*Hab. West Indies*—PORTORICO<sup>1,2</sup>.

#### 121. BATRACHEDRA STIGMATOPHORA, sp. n.

*Antennae* with distinct white and fuscous annulations. *Palpi* slender, slightly recurved; yellowish white. *Head* and *thorax* whitish ochreous. *Fore wings* fawn-ochreous, mottled with whitish ochreous, thus forming an indistinct pale fascia at about one-fourth from the base, broader on the costal than on its dorsal extremity, sprinkled on its inner edge with minute black scales; a second pale space occurs about the middle of the wing, also irregularly sprinkled with minute black scales; towards the apex the costa and dorsum are both blotched with whitish ochreous, a streak of black scales running between the blotches to the apex and through the apical cilia: cilia greyish, whitish ochreous immediately beneath



the apex. *Exp. al.* 8 mm. *Hind wings* grey; cilia pale grey. *Abdomen* ochreous. *Legs* whitish, obliquely blotched with fuscous externally, spurs banded with black.

*Type*, ♂ Mus. Wlsm.

*Hab. West Indies*—HAYTI (Cap Haiti, 18 V.—Gudmann); ST. THOMAS, 12 III.—17 IV. (Gudmann, Hedemann). Five specimens.

#### 122. BATRACHEDRA TARSIMACULATA, sp. n.

*Antennæ* whitish ochreous, thickly barred above with fuscous, this colour forming three dark annulations before the apex. *Palpi* whitish, second joint with two fuscous spots, apical joint with two fuscous bands, one before the apex, the second near its base. *Head* whitish. *Thorax* dull straw-white. *Fore wings* dull straw-white; a short curved fuscous streak from the base below the fold; a long streak above it, also from the base, running along the costa to one-third the wing-length, thence slightly deviating downwards to the end of the cell; beneath its apex is a small dorsal spot, and above its apex commences on the costa another dark streak, which leaving the pale costal cilia runs to the apex and narrowly through the apical cilia (these markings are all dark fuscous); cilia straw-white, tending to greyish about the tornus. *Exp. al.* 6 mm. *Hind wings* and cilia brownish grey. *Abdomen* shining whitish ochreous. *Legs* straw-white; hind tibiæ obliquely banded externally and their tarsi distinctly biannulate with dark fuscous.

*Type*, ♀ Mus. Wlsm.

*Hab. West Indies*—ST. THOMAS, 6 III.—9 IV. (Gudmann, Hedemann). Four specimens.

### III. COSMOPTERYGINÆ.

#### 40. COSMOPTERYX, Hb.

#### 123. COSMOPTERYX ATTENUATELLA, Wkr.

n. syn. = *LESPEDZEÆ*, Wlsm.

*Gelechia attenuatella*, Wkr. Cat. Lp. Ins. B. M. XXX. 1019 (1864)<sup>1</sup>. *Cosmopteryx lespedezeæ*, Wlsm. Tr. Am. Ent. Soc. X. 198 (1882)<sup>2</sup>. [? = *Cosmopteryx* (? *gemmiferella*, Clem.), Mschl. Ab. Senck. Nat. Ges. XV. 345, 354 (1890)<sup>3</sup>; Wlsm. Pr. Z. Soc. Lond. 1891, 536, 548 (1892)<sup>4</sup>.] *Cosmopteryx lespedezeæ*, Riley, Smith's List Lep. Bor. Am. 107. No. 5771 (1891)<sup>5</sup>. *Gelechia attenuatella*, Wlsm. Pr. Z. Soc. Lond. 1891, 519, 545 (1892)<sup>6</sup>. *Cosmopteryx lespedezeæ*, Wlsm. Pr. Z. Soc. Lond. 1891, 536, 548 (1892)<sup>7</sup>.

*Hab. UNITED STATES*<sup>2,5</sup>—Texas<sup>7</sup>, N. Carolina<sup>7</sup>. Larva *Lespedeza*<sup>2,7</sup>. *West Indies*—JAMAICA<sup>1,6</sup>; HAYTI (Port-au-Prince, 22 V., Gudmann); [? PORTORICO<sup>3,4</sup>]; ST. CROIX, 3–31 V. (Gudmann, Hedemann, Pontoppidan); ST. VINCENT<sup>7</sup>; GRENADA (Balthazar, 250 ft., windward side, 15 III.—15 IV. H. H. Smith).

Bred by Mr. Gudmann at St. Croix, but the plant not identified.

*Cosmopteryx gemmiferella*, Clem., is not known to occur in the

West Indies, and the species recorded by Möschler is probably *attenuatella*, but as it is not described I am unable to identify it; there is, however, no reason for including *gemmiferella* in the West Indian fauna on such a slight and doubtful identification.

124. COSMOPTERYX SIMILIS, sp. n.

*Antennæ* smoky white, with a broad darkish band before the apex preceded by a narrow black ring, the apex itself being black; these markings are all outlined in clear white. *Palpi* shining white. *Head* and *thorax* greyish brown, with a central, and two lateral, slender whitish streaks. *Fore wings* greyish brown to fully half the wing-length, a broad pale orange-yellow band preceding the greyish-brown apex and cilia, in which are a triangular clear white costal spot and a slender white line running through the apex; the pale orange space is oblique on its inner margin, and extends backwards a little on the costa, it is preceded by two golden metallic spots, one below the other beyond its middle, the latter being tipped with black; on its outer edge it sends forward a slight projection below the white costal spot into the brown apical portion, this projection being margined above and beneath by golden scales; on the brown basal half of the wing are four slender white streaks, one along the dorsum, one commencing on the base at the costa and diverted very obliquely downwards a little beyond the base, and two intermediate straight streaks, of which the lower is longer than the upper and reaches nearly to the lower of the two metallic spots. *Exp. al.* 8-9 mm. *Hind wings* pale brownish grey; cilia the same. *Abdomen* brownish ochreous. *Legs* whitish clouded with brown.

*Type*, ♂ Mus. Wlsm.

*Hab. West Indies*—ST. CROIX, 3 V.-24 VI. (*Gudmann, Heide-mann, Pontoppidan*); ST. THOMAS, 8 III.-5 IV. (*Gudmann*). Five specimens.

This species is very nearly allied to *attenuatella*, Wkr., but differs in the more oblique inner margin of the yellow transverse fascia, in the nearer approach to it of the lower streak on the basal patch, and in the broken metallic band which separates this from the fascia, which appears to encroach more considerably upon the dark apical portion of the wing.

125. COSMOPTERYX SANCTI-VINCENTI, Wlsm.

*Cosmopteryx sancti-vincenti*, Wlsm. Pr. Z. Soc. Lond. 1891, 536-7, 548 (1892)<sup>1</sup>.

*Hab. West Indies*—ST. VINCENT<sup>1</sup>; GRENADA (*Chantilly Estate*, 350 ft., windward side, 13 IV.—*H. H. Smith*).

126. COSMOPTERYX ABNORMALIS, sp. n.

*Antennæ* blackish, speckled with white and biannulated with white before the apex, a silvery spot on the basal joint. *Palpi* whitish, shaded above with fuscous. *Head* dark slaty grey.

*Thorax* dark brown. *Fore wings* dark umber-brown, with brilliant silver-white metallic spots—two at one-fourth from the base forming a scarcely broken oblique fascia tending outward from the costa to the dorsum; two on the middle, one costal the other dorsal, both straight; two at one-third from the apex, almost joined, not reaching the costa, with a silvery white streak in the commencement of the costal cilia; beyond these another metallic silvery dot lies at the extreme apex, and a silvery white streaklet at the extremity of the apical cilia; dorsal cilia purplish grey. *Exp. al.* 8 mm. *Hind wings* dark vinous grey; cilia purplish grey. *Abdomen* dark brown speckled with metallic scales. *Legs* dark brown, spurs and tarsal joints whitish.

*Type*, ♂ Mus. Gudmann.

*Hab.* West Indies—HAYTI (Port-au-Prince, 24 V.—Gudmann). Unique.

#### IV. LAVERNINÆ.

##### 41. ANYBIA, Stn.

##### 127. ANYBIA CONSPERSA, Wlsm.

*Anybia conspersa*, Wlsm. Pr. Z. Soc. Lond. 1891, 537, 548 (1892)<sup>1</sup>.

*Hab.* West Indies—SAN DOMINGO (Monte Christi, 17 V.—Gudmann); ST. THOMAS, 8 IV. (Gudmann); ST. VINCENT<sup>1</sup>; GRENADA (Balthazar, 250–300 ft., windward side, 20 IV.—8 V.—H. H. Smith).

Bred by Mr. Gudmann at St. Thomas, from larvæ feeding “in the pulses of *Abrus precatorius*.”

##### 128. ANYBIA PIPERATELLA, sp. n.

*Antennæ*: the basal joint enlarged on its outer half; dust-grey. *Palpi* dust-grey, the apical joint slightly mottled externally. *Head* and *thorax* dusty grey. *Fore wings* dust-grey, minutely speckled with fuscous; cilia brownish grey. *Exp. al.* 9 mm. *Hind wings* and cilia pale brownish grey. *Abdomen* and *legs* brownish grey; anal tuft in the male ochreous.

*Type*, ♀ Mus. Wlsm.

*Hab.* West Indies—ST. CROIX, 8–26 V. (Hedemann, Pontopidan); ST. THOMAS, 20 III.–14 IV. (Gudmann, Hedemann). Seven specimens.

##### 129. ANYBIA CURVIPUNCTELLA, Wlsm.

*Anybia curvipunctella*, Wlsm. Pr. Z. Soc. Lond. 1891, 538, 548 (1892)<sup>1</sup>.

*Hab.* West Indies—ST. CROIX, 24–29 IV. (Hedemann); ST. THOMAS, 6 IV. (Gudmann); ST. VINCENT<sup>1</sup>; GRENADA (Balthazar, 250–300 ft., windward side, 4–8 V.—H. H. Smith).

A series of specimens, evidently of this species, received from St. Croix, St. Thomas, and Grenada, has enabled me to observe

that the semicircular spot on the fold from which the name is taken is somewhat an exceptional marking; it is scarcely traceable in any of the specimens now before me, and in the majority of them is entirely absent. I have, however, no hesitation in identifying them as belonging to the same species.

130. *ANYBIA TRIPUNCTATA*, sp. n.

*Antennæ* tawny fuscous. *Palpi* whitish ochreous, shaded with fuscous externally. *Head* and *thorax* tawny fuscous; face shining whitish ochreous. *Fore wings* tawny fuscous with a vinous sheen; three dark fuscous spots, a pair on the outer half of the cell in line with each other, connected by a short whitish ochreous streak, the third on the middle of the fold tipped with whitish ochreous at its outer extremity; cilia greyish with a vinous tinge. *Exp. al.* 8 mm. *Hind wings* and cilia greyish with a slight vinous tinge. *Abdomen* and *legs* whitish ochreous.

*Type*, ♀ Mus. Hedemann.

*Hab.* West Indies—ST. CROIX, 29 IV. (*Hedemann*); ST. THOMAS, 10 III. (*Gudmann*). Two specimens.

131. *ANYBIA METALLIFERA*, sp. n.

*Antennæ* brownish fuscous. *Palpi* pale cinereous. *Head* smooth, greyish; face whitish, shining. *Thorax* and *fore wings* coppery brown, the latter with chalybeous bands and spots; a narrow fascia at one-fourth is followed by a central fascia of the same colour, which is wider toward the dorsum than on the costa; at the tornus is an outwardly curved patch pointing toward a small spot at the apex, another spot occurring on the costa at the commencement of the cilia; these markings are all bluish chalybeous; cilia brownish fuscous. *Exp. al.* 8 mm. *Hind wings* pale coppery brown, with brownish-fuscous cilia. *Abdomen* greyish fuscous, with some chalybeous scales above. *Legs* brownish fuscous.

*Type*, ♀ Mus. Wlsm.

*Hab.* West Indies—JAMAICA (Monteague, 1200 ft., I.—*Cockerell*). Unique.

V. *HELIODININÆ*.

42. *HELIODINES*, Stn.

*HELIODINES*, Stn. Ins. Br. Lp. Tin. 243 (1854).

= [*CHRYSOESTHIA*, Hb. Verz. bek. Schm. 422 (1826) *partim.*]

† *CHRYSESTHIA*, HS. Schm. V. 314 (1855).

= *ÆTOLE*, Chamb. Can. Ent. VII. 73 (1875).

Herrich-Schäffer's restriction of *Chrysoesthia*, Hb., is subsequent to the publication of *Heliodines* by Stainton, whose name is therefore entitled to stand for the genus of which *roesella*, L., is the type.



132. *HELIODINES MARGINATA*, Wlsm.

*Heliodines marginata*, Wlsm. Pr. Z. Soc. Lond. 1891, 535, 547 (1892)<sup>1</sup>.

*Hab.* West Indies—ST. VINCENT<sup>1</sup>.

133. *HELIODINES SCHULZELLA*, F.

*Tinea schulzella*, F. Ent. Syst. III. (2) 321–2. No. 152 (1794)<sup>1</sup>; Suppl. Ent. Syst. 498. No. 92 (1798)<sup>2</sup>. *Phalæna* (*Tinea*) *schulzella*, Turton, Syst. Nat. III. 376 (1806)<sup>3</sup>.

"*schulzella*. 125. *T.* alis auratis: lineis duabus oppositis marginalibus punctorum argenteorum, costa atra.

"Corpus parvum. Antennæ atræ. Caput et thorax atra, nitida, pectoris marginalibus aureis. Abdomen aureum. Alæ aureæ, nitidæ, lineis duabus oppositis e punctis argenteis, altera costæ nigræ adjacente, altera margini tenuiori. Posticæ nigræ.

"*Habitat* in Americæ meridionalis Ins., Dr. Pflug"<sup>1</sup>. = West Indies<sup>1,3</sup> (probably St. Croix or St. Thomas, Wlsm.).

There appears to be little doubt that the above description was taken from a species of *Heliodines* which differs from any known to me. It appears to be intermediate between *marginata* and *quinqueguttata*, agreeing with the former in having a black costa, but differing from it in the possession of metallic spots; *quinqueguttata* agrees in having the metallic spots, but the costa is not black.

134. *HELIODINES QUINQUEGUTTATA*, sp. n.

*Antennæ* simple; shining bronzy grey. *Palpi* short, slender, drooping; shining pale æneous. *Head* smooth; shining bronzy. *Thorax* bronzy grey, golden orange beneath. *Fore wings* to beyond the middle golden orange, with the extreme base and 5 spots (3 subcostal and 2 intermediate dorsal, the dorsal spots alternating with the costal) all shining bronzy metallic, slenderly outlined with black scales in some lights; rather more than the apical third of the wing is shining bronzy metallic, extending farther along the dorsum than along the costa, its inner edge being indented on the cell; cilia bronzy grey. *Exp. al.* 8.5 mm. *Hind wings* shining bronzy; cilia bronzy grey. *Abdomen* shining bronzy brownish, with a bright metallic whitish patch along the first three segments beneath; anal tuft whitish. *Legs* bronzy brownish, with paler shining bands and spurs.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—JAMAICA (Kingston, 10 XII.—*T. D. A. Cockerell*); ST. THOMAS, 11 III.–12 IV. (*Gudmann, Hedemann*). Five specimens.

Bred by Mr. Cockerell in Jamaica "from galls on *Portulaca* sp.; these galls produced also a *Cecidomya*, which was probably the gall-maker." Mr. Gudmann also bred this species in St. Thomas.

"Raupe hellgrün, mit hellbraunem Kopf; 16-füssig. Vom Kopf bis zum After allmählig an Breite zunehmend; auf dem Rücken finden sich zwei und auf jeder Seite eine Längsreihe sehr feinen

schwarzen, behaarten Punkte, so dass auf jedem Segment sich acht solchen befinden. Die Raupe lebte an einer niedrigen Pflanze mit sehr feinem Gespinnste auf der Unterseite der Blätter, ging aber, wenn es frass, minirend in das Blatt hinein." (*Gudmann*.)

"The moth holds the second pair of legs outstretched as in *Stathmopoda*" (*Hedemann*).

### 135. *HELIODINES AUREOFLAMMA*, sp. n.

*Antennæ* and *palpi* shining bronzy grey, the latter somewhat paler. *Head* and *thorax* shining bronzy grey, the face and the underside of the thorax shining pale æneous. *Fore wings* golden orange, with two basal streaks, five spots, and two apical streaks all shining chalybeous; the two basal streaks lie along the upper edge of the fold and along the dorsum respectively; the spots are two subcostal before and beyond the middle and three dorsal alternating with them, the second dorsal being between the two subcostal ones; the apical streaks lie one below the costa, the other commencing nearer to the apex and running along the base of the subapical cilia; cilia bronzy grey. *Exp. al.* 8 mm. *Hind wings* bronzy brown; cilia bronzy grey. *Abdomen* bronzy brownish; beneath shining pale æneous. *Legs* shining steel-grey; *tibiæ* orange.

*Type*, ♂ Mus. Hedemann.

*Hab.* West Indies—ST. THOMAS, 9 III. (*Hedemann*). Unique.

"The moth holds the second pair of legs outstretched as in *Stathmopoda*" (*Hedemann*).

## VI. *HELIOZELINÆ*.

### 43. *HELIOZELA*, HS.

#### 136. *HELIOZELA CUPREA*, sp. n.

*Antennæ* with the basal joint elongate, slightly enlarged posteriorly; bronzy cupreous. *Palpi* steel-white. *Head* and face, *thorax* and *fore wings* unicolorous bronzy cupreous; cilia coppery grey. *Exp. al.* 7 mm. *Hind wings* and cilia coppery grey. *Abdomen* dark bronzy cupreous. *Legs* cupreous; tarsal joints paler.

*Type*, ♂ Mus. Hedemann.

*Hab.* West Indies—ST. THOMAS, 16 III. (*Hedemann*). Unique.

#### 137. *HELIOZELA AHENEA*, sp. n.

*Antennæ* purplish grey. *Palpi*, *head*, and *thorax* shining, metallic, brassy; underside of thorax brassy metallic. *Fore wings* brassy metallic, without markings; the scales being laid on in transverse lines give a slightly ribbed appearance under the lens; cilia purplish grey. Underside purplish grey. *Exp. al.* 4 mm. *Hind wings* and cilia purplish grey. *Abdomen* brassy metallic, tending to purplish grey at the anal extremity; underside brassy

metallic. *Legs* whitish; hind tarsal joints banded above with dark grey.

*Type*, ♂ Mus. Hedemann.

*Hab.* West Indies—HAYTI (Port-au-Prince, 24 V.—*Gudmann*); ST. THOMAS, 12 IV. (*Hedemann*). Two specimens.

## VII. SCYTHRINÆ.

### 44. ŒCIA, g. n.

(οικεῖος=belonging to the house.)

*Type*, *Œcia maculata*, Wlsm.

*Antennæ* longer than the fore wings, simple, stout; basal joint without pecten.

*Labial palpi* diverging, smooth; second joint porrect, rather stout; apical joint erect, nearly as long as the second.

*Maxillary palpi* rudimentary.

*Ocelli* present.

*Haustellum* absent.

*Head* and *thorax* clothed with appressed scales.

*Fore wings* elongate, costa rather straight, apex slightly depressed, bluntly pointed; termen oblique; tornus not developed. *Neuration*: 12 veins, 7 and 8 stalked, 7 to apex.

*Hind wings* hardly as broad as the fore wings, costa straight, abdominal angle distinct, dorsum tapering to the pointed apex; cilia 2. *Neuration*: 8 veins, 6 and 7 long-stalked, 3 and 4 remote, 5 almost parallel with 4.

*Abdomen* slightly flattened.

*Legs*: hind tibiæ and first joint of the tarsi with long loose hairs above.

Allied to *Endrosis*, Hb., and having apparently the same habits, but differing in having vein 6 of the hind wings present, 3 and 4 separate, and the haustellum absent.

### 138. ŒCIA MACULATA, sp. n.

*Antennæ* smoky greyish. *Palpi* pale ochreous. *Head* pale straw-ochreous. *Thorax* pale straw-ochreous, shaded with smoky grey. *Fore wings* pale straw-ochreous, blotched and margined with smoky grey; this colour commencing near the base extends along the fold and along the costa without including the costal cilia and embraces the apex; on the middle of the fold is a stronger blotch of the same colour, slightly diffused downwards to the dorsum; a similar blotch a little above and beyond it scarcely before the middle; a third at the end of the cell extending almost across the wing; cilia pale straw-ochreous. *Exp. al.* 10–12 mm. *Hind wings* shining pale yellowish grey; the cilia with a slight ochreous tinge. *Abdomen* pale ochreous. *Legs* with the tibiæ and tarsi somewhat hairy; whitish ochreous.

*Type*, ♂ ♀ Mus. Wlsm.

*Hab. West Indies*—ST. THOMAS, 16–18 III. (*Hedemann*).  
*BRAZIL*—Pará (Amazons), 9 X.–10 I. (*Schulz*). Twelve specimens.

"Very common on the inner walls of nearly every house in St. Thomas" (*Hedemann*).

This species so greatly resembles *Tineola uterella*, Wlsm., that, without examining the head and palpi, they might easily be placed in the same series.

## VII. HYPONOMEUTIDÆ.

### I. HYPONOMEUTINÆ.

#### 45. ATTEVA, Wkr.

ATTEVA, Wkr. Cat. Lp. Ins. B.M. II. 526 (1854).

=§*PÆCILOPTERA*, Clem. Pr. Ac. Nat. Sc. Phil. XII. 546–7 (1860).

=*AMBLOTHRIDIA*, Wlgrn. Resa Eugen., Zool. Ins. 385 (1861).

=*CORINEA*, Wkr. Cat. Lep. Ins. B.M. XXVIII. 542 (1863).

=*ÆTA*, Grt. Pr. Ent. Soc. Phil. V. 230–1 (1865).

=*SCINTILLA*, Gn. Ann. Soc. Ent. Fr. (5 s.) IX. 287 (1879).

=*SYBLIS*, Gn. Ann. Soc. Ent. Fr. (5 s.) IX. 288–9 (1879).

Berg [An. Soc. Ci. Argent. X. 99–100 (1880)] seems to have had full justification for uniting all the generic names given above. Moore had already (Pr. Z. Soc. Lond. 1867, 669) sunk *Corinea*, Wkr., and *Amblothridia*, Wlgrn., as synonyms of *Atteva*, Wkr.

#### 139. ATTEVA PUNCTELLA, Cram. & Stoll.

=†*PASTULELLA*, F.<sup>2</sup>, ‡*PUSTULELLA*, F.<sup>3</sup>; *PUSTULATA*, F.<sup>4</sup>;  
 =*SUBTILIS*, Hb.<sup>6</sup>; =*AUREA*, Fitch<sup>25</sup>; =*COMPTA*, Clem.<sup>20</sup>; =  
*GEMMATA*, Grt.<sup>25</sup>

*Phalcena* (*Tinea*) *punctella*, Cram. & Stoll, Pap. Exot. IV. 164, 251 (Essai Syst. Lp.) 28, Pl. 372. fig. L (1782)<sup>1</sup>. *Tinea pastulella*, F. Mant. Ins. II. 241. No. 16 (1787)<sup>2</sup>. *Tinea pustulella*, F. Ent. Syst. III. (2) 292. No. 20 (1794)<sup>3</sup>. *Lithosia pustulata*, F. Sppl. Ent. Syst. 462. No. 16 (1798)<sup>4</sup>. *Phalcena* (*Tinea*) *pustulella*, Turton, Syst. Nat. III. 363 (1806)<sup>5</sup>. *Crameria subtilis*, Hb. Verz. bek. Schm. 168. No. 1737 (ante 1826)<sup>6</sup>. *Phycis punctella*, Verloren, Cat. Syst. Lp. Cram. 138, 274 (1837)<sup>7</sup>. *Deiopeia aurea*, Fitch, III. Rp. Ins. N.Y. 168–9 (1856)<sup>8</sup>. *Pæcilopectera compta*, Clem. Pr. Ac. Nat. Sc. Phil. XII. 547 (1860)<sup>9</sup>. *Deiopeia aurea*, Morris, Syn. Lp. N. Am. 251–2 (1862)<sup>10</sup>. *Pæcilopectera compta*, Morris, Syn. Lp. N. Am. 312 (1862)<sup>11</sup>. *Deiopeia aurea*, Pack. Pr. Ent. Soc. Phil. III. 106 (1864)<sup>12</sup>. *Pæcilopectera compta*, Grt. Pr. Ent. Soc. Phil. IV. 319 (1865)<sup>13</sup>. *Æta compta*, Grt. Pr. Ent. Soc. Phil. V. 230–1 (1865)<sup>14</sup>. *Cydosia punctella*, Wkr. Cat. Lp. Ins. B. M. XXXV. 1894 (1866)<sup>15</sup>. *Cydosia aurea*, Grt. & Rbs. List Lp. N. Am. I. p. vii (1868)<sup>16</sup>. *Æta compta*, Riley, I. Rp. Ins. Mo. 1868, 151–3, Pl. II. 22–3 (1869)<sup>17</sup>; Z. Stett. Ent. Ztg. XXXII. 178 (1871)<sup>18</sup>.



*Eta aurea*, Stretch, Ill. Zyg. & Bomb. N. Am. 159-60, Pl. VII. 10 (1872)<sup>19</sup>. *Eta punctella*, Z. Verh. z.-b. Ges. Wien, XXIII. 228-30 (1873)<sup>20</sup>; Riley, Pr. Ac. Sc. St. Louis, III. liii-iv. (1873)<sup>21</sup>. *Eta gemmata*, Grt. Bull. Buff. Soc. N. H. I. 93-4 (1873)<sup>22</sup>. *Eta aurea*, Stretch, Ill. Zyg. & Bomb. N. Am. 159-60, 240-2 (†*aurera*), Pl. VII. 10 (1874)<sup>23</sup>. *Eta punctella*, Chamb. Bull. U.S. G.G. Surv. IV. 159 (1878)<sup>24</sup>. *Scintilla pustulella*, Gn. Ann. Soc. Ent. Fr. (5 s.) IX. 287-8 (1879)<sup>25</sup>. *Atteva punctella*, Berg, An. Soc. Ci. Argent. X. 100-2 (1880)<sup>26</sup>. *Eta compta*, Riley, U.S. Ent. Com. (Dept. Intr.), Bull. VI. 13, 58 (1881)<sup>27</sup>; Pack. U.S. Ent. Com. (Dept. Intr.), Bull. VII. 132 (1881)<sup>28</sup>; Pack. U.S. Ent. Com. (Dept. Agr.), Rp. V. 669 (1890)<sup>29</sup>. *Eta punctella*, Wlsm. Pr. Z. Soc. Lond. 1891, 532, 547 (1892)<sup>30</sup>; Hdm. Stett. Ent. Ztg. LVII. 10-11 (1896)<sup>31</sup>.

Larva, *Ailanthus glandulosus*, VII-IX.<sup>17, 18, 20-21, 23-4, 26-30</sup>; *Cos-telu erecta*<sup>31</sup>.

Hab. UNITED STATES (Georgia, Texas, Missouri)<sup>8-14, 16-21, 23, 24, 26, 27-30</sup>; IX.-XI. *hib.*<sup>13, 19, 20, 23</sup>. HONDURAS (=Himalaya Mts.)<sup>15</sup><sup>30</sup>. West Indies—CUBA<sup>22</sup>; ST. CROIX<sup>31</sup>; TRINIDAD<sup>30</sup>. SURINAM<sup>1, 22, 30</sup>; FRENCH GUIANA (Cayenne)<sup>25, 30</sup>; COLOMBIA<sup>18</sup>; BRAZIL (Santarem, Villa Nova)<sup>15, 30</sup>; ARGENTINA (Buenos Aires)<sup>26, 30</sup>.

Grote seems to have been of the opinion that three species are represented in the above synonymy (which, if distinct, should receive the following names:—*aurea*, Fitch, United States; *gemma*, Grt., West Indies; *punctella*, Cram., S. America); on the other hand, Riley and Berg considered that these names represent but a single species. I give the synonymy as I find it, withholding my own views until I have had the opportunity of studying more material.

#### 140. ATTEVA FULVIGUTTATA, Z.

= *GLAUCOPIDELLA*, Gn.<sup>3</sup>; = †*FULVIGUTTELLA*, Wlsm.

*Eta fulviguttata*, Z. Verh. z.-b. Ges. Wien. XXIII. 231-2 (1873)<sup>1</sup>. *Syblis glaucopidella*, Gn. Ann. Soc. Ent. Fr. (5 s.) IX. 289 (1879)<sup>2</sup>. *Atteva fulviguttata*, Berg, An. Soc. Ci. Argent. X. 106-7 (1880)<sup>3</sup>. *Eta fulviguttella*, Wlsm. Pr. Z. Soc. Lond. 1891, 532, 547 (1892)<sup>4</sup>.

Hab. West Indies—JAMAICA<sup>2-4</sup>. (AUSTRALIA ?)<sup>1, 4</sup>.

#### 141. ATTEVA FASTUOSA, Z.

*Eta fastuosa*, Z. Hor. Soc. Ent. Ross. XIII. 225-7, Pl. III. 68 (1877)<sup>1</sup>. *Atteva fastuosa*, Berg, An. Soc. Ci. Argent. X. 109 (1880)<sup>2</sup>. *Eta fastuosa*, Wlsm. Pr. Z. Soc. Lond. 1891, 533, 547 (1892)<sup>3</sup>.

Hab. West Indies—CUBA<sup>1-3</sup>.

#### 142. ATTEVA SIDEREA, Wlsm.

*Eta siderea*, Wlsm. Pr. Z. Soc. Lond. 1891, 533, 547 (1892)<sup>1</sup>.

Hab. West Indies—SAN DOMINGO<sup>1</sup>.

## 46. TAMARRHA, Wkr.

TAMARRHA, Wkr. Cat. Lep. Ins. B. M. XXIX. 816 (1864).

In my previous paper (Pr. Z. Soc. Lond. 1891, 527) I sunk the genus *Tamarrha*, Wkr., as a synonym of *Psecadia*, Hb. In this I was guided by the neurcation of *Tamarrha gelidella*, Wkr., which is a true *Psecadia*. At that time I had seen only the type of Walker's other species *nivosella*, which is a female. The male of this species, however, shows a strong costal tuft of diverging hairs near the base of the hind wings, which separates it at once from *Psecadia*. It possesses veins 7 and 8 of the fore wings from a common stem, a character which also somewhat misled me as to its affinities; the length of the cell, however, and the general character of the neurcation, together with the roughened head, seem to indicate an alliance with the *Hyponomeutidæ* rather than with the *Æcophoridæ*. I would therefore revive the generic name *Tamarrha*, Wkr., retaining *nivosella* as the type.

## 143. TAMARRHA NIVOSELLA, Wkr.

n. syn. = *ADUSTELLA*, Z.

*Tamarrha nivosella*, Wkr. Cat. Lp. Ins. B. M. XXIX. 817 (1864)<sup>1</sup>. *Psecadia adustella*, Z. Hor. Soc. Ent. Ross. XIII. 240-1 (1877)<sup>2</sup>; Mschl. Ab. Senck. Nat. Ges. XV. 343, 354 (1890)<sup>3</sup>; Wlsm. Pr. Z. Soc. Lond. 1891, 528, 546 (1892)<sup>4</sup>. *Psecadia nivosella*, Wlsm. Pr. Z. Soc. Lond. 1891, 528, 546 (1892)<sup>5</sup>.

*Hab. West Indies*—CUBA (*Tring Mus.*); JAMAICA<sup>1,5</sup> (*Schaus*; Kingston, 24 VII., *Cockerell*; Newcastle, *Mus. Rayonot*, "No. 750—1894, Wlsm."); SAN DOMINGO<sup>1,5</sup>; PORTORICO<sup>2,3,4</sup>; TRINIDAD (*Schaus*).

## 47. EUARNE, Mschl. &amp; Saalm.

## 144. EUARNE OBLIGATELLA, Mschl.

*Euarne obligatella*, Mschl. Ab. Senck. Nat. Ges. XV. 340, 354 (1890)<sup>1</sup>; Wlsm. Pr. Z. Soc. Lond. 1891, 533, 547 (1892)<sup>2</sup>.

*Hab. West Indies*—PORTORICO<sup>1,2</sup>.

## 48. TRICHOSTIBAS, Z.

As nothing has been recorded of the life-history of this genus, I may remark that there are cocoons of *Trichostibas fumosa*, Z., in the Museums of Oxford and Cambridge Universities. In the Oxford Museum is a specimen of the imago with its cocoon and pupa labelled "Amazons, from pink cocoon—Bates" ("193. 1893. Wlsm."). I am not aware that its food-plant is known, but the cocoon is so remarkable that it is worth describing, if only in the hope that collectors in the West Indies or elsewhere may breed some of the species. The cocoon is of a pinkish-red colour, and is formed of a network of stiff threads; it is almost kidney-shaped, and at the anal extremity has a produced neck. It hangs free from a long stiff thread about an inch and a half long, which

is attached to the side before the anterior end; this thread is here trifurcate, one strand going downwards, the other two strands passing around the cocoon and uniting to form a loop at about one-fourth from the anterior extremity. These three strands and their stem appear to be spun first; the upper one probably passes round the whole cocoon and is attached to the loop before mentioned, and on these as a foundation the cross-threads, which traverse the cocoon obliquely, are probably spun, but this can only be determined from observing the habits of the spinning larva. In the Oxford Museum specimen the pupa is protruded from the upper extremity between the loop, which makes it difficult to understand for what purpose the neck at the anal extremity is constructed. The cocoons of a species of *Trichostibas* are figured hanging from branches in 'The Standard Natural History,' published by Cassino & Co., of Boston, Mass. I have only a separate copy of the article "Heterocera," by Professor Fernald, so I am unable to quote the volume—the "Fig. 557.—Cocoons of a Brazilian Tineid," occurs on p. 438, but I cannot find that it is noticed in the text. As Bates collected *Trichostibas fumosa* on the Amazons, there are probably specimens in the British Museum, and if Walker described them he would be most likely to locate the species in the *Lithosiadæ*.

145. *TRICHOSTIBAS CALLIGERA*, Z.

*Trichostibas calligera*, Z. Hor. Soc. Ent. Ross. XIII. 231-2 (1877)<sup>1</sup>; Wlsm. Pr. Z. Soc. Lond. 1891, 533, 547 (1892)<sup>2</sup>.

*Hab. West Indies*—CUBA<sup>1,2</sup>.

146. *TRICHOSTIBAS OVATA*, Z.

*Trichostibas ovata*, Z. Hor. Soc. Ent. Ross. XIII. 233 (1877)<sup>1</sup>; Wlsm. Pr. Z. Soc. Lond. 1891, 533, 547 (1892)<sup>2</sup>.

*Hab. West Indies*—CUBA<sup>1,2</sup>.

147. *TRICHOSTIBAS SORDIDATA*, Z.

*Trichostibas sordidata*, Z. Hor. Soc. Ent. Ross. XIII. 233-4 (1877)<sup>1</sup>; Wlsm. Pr. Z. Soc. Lond. 1891, 534, 547 (1892)<sup>2</sup>.

*Hab. West Indies*—PORTORICO<sup>1,2</sup>.

148. *TRICHOSTIBAS* ? *IOPHLEBIA*, Z.

*Trichostibas iophlebia*, Z. Hor. Soc. Ent. Ross. XIII. 228-9, Pl. III. 69 (1877)<sup>1</sup>. *Trichostibas* ? *iophlebia*, Wlsm. Pr. Z. Soc. Lond. 1891, 534, 547 (1892)<sup>2</sup>.

*Hab. West Indies*—ANTILLES<sup>1,2</sup>.

149. *TRICHOSTIBAS* ? *PALLIDICOSTELLA*, sp. n.

*Antennæ* blackish. *Palpi* short, slender, not projecting beyond the face, apical joint as long as the second; black. *Head* and *thorax* pale mouse-grey. *Fore wings* dark mouse-grey, the costa whitish grey throughout; cilia whitish grey, shading to dark

mouse-grey at the tornus. Underside unspotted, the pale costa showing on the outer half. *Exp. al.* 26 mm. *Hind wings* leaden grey; cilia paler. *Abdomen* dark leaden grey. *Legs* dark leaden grey, inclining to fuscous.

*Type*, ♀ Mus. Wlsm.

*Hab.* West Indies—JAMAICA (*Coll. Ragonot*).

This is not a true *Trichostibas*; it differs from the type in having veins 4 and 5 of the hind wings connate and vein 2 recurved out of 3 instead of recurved out of the cell, but in the absence of the ♂ I am unwilling to describe it as the type of a new genus.

#### 49. PARATIQUEADRA, g. n.

(παρά: *Tiquadra*, nom. gen.)

*Type*, *Paratiquadra forficulella*, Wlsm.

*Antennæ* ( $\frac{2}{3}$ ): ♂ serrate beneath, unciniate; rather stout.

*Labial palpi* rather short, projecting; apical joint much shorter than the second.

*Maxillary palpi* (broken?).

*Haustellum* rather short.

*Head* smooth, slightly roughened posteriorly.

*Thorax* smooth.

*Fore wings*: costa arched, apex rounded, termen obliquely rounded. *Neuration*: 12 veins all separate, 7 to apex, 2 from near angle of cell, with an internal vein from between 6 and 7 to between 10 and 11.

*Hind wings* elongate ovate, evenly rounded from apex; transparent, iridescent; cilia short. *Neuration*: 8 veins all separate, 2 from end of basal third of cell, 3 remote, 3 and 4 widely separated, 4, 5, 6, and 7 almost parallel, but 5 is slightly curved downwards; an internal vein from between 5 and 6 to base.

*Abdomen* flat, hairy; anal claspers long and curved inwards and upwards, somewhat resembling the analogous organs in the *Forficulidæ*.

*Legs* smooth.

#### 150. PARATIQUEADRA FORFICULELLA, sp. n.

*Antennæ* dark brownish fuscous. *Palpi* whitish grey. *Head* whitish grey, face paler. *Thorax* pale fawn brownish. *Fore wings* pale fawn brownish, a pale whitish-cinereous space along the cell blending with the darker ground-colour towards the tornus, and a similar pale space along the costa nearly to the apex; cilia very pale fawn-brown. Underside pale fawn-brownish, with a large subovate blackish patch extending along the outer half of the cell at its upper edge nearly to the costa, and including the basal two-thirds of veins 8 and 9 as well as the greater portion of vein 10 and the outer part of vein 11. *Expl. al.* 24 mm. *Hind wings* transparent, iridescent, bluish grey, margined with a pale shade of fawn-brown; cilia pale fawn-brown. *Abdomen* clothed with pale



fawn-brown hairs; *anal claspers* somewhat peculiar, long, curved inwards and upwards in the form of two chitinous processes resembling the analogous organs in the *Forficulidæ*. Legs pale fawn-brown.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—JAMAICA (*Coll. Ragonot*).

The dark patch on the underside of the fore wings is probably a sexual character confined to the ♂.

#### 50. HYPONOMEUTA, Ltr.

[†*YPONOMEUTA*, Ltr. (1796); ‡*HYPONOMEUTA*, Sdf. (1837).]

#### 151. HYPONOMEUTA MAHALEBELLUS, Gn.

*Yponomeuta mahalebella*, Gn. Ind. Méth. 105-6 (1845)<sup>1</sup>. *Hyponomeuta mahalebella*, Stgr. & Wk. Cat. Lp. Eur. 277. No. 1555 (1871)<sup>2</sup>. *Yponomeuta mahalebella*, Gn. Ann. Soc. Ent. Fr. (5 s.) IX. 282 (1879)<sup>3</sup>. *Hyponomeuta mahalebella*, Wlsm. Pr. Z. Soc. Lond. 1891, 532, 547 (1892)<sup>4</sup>.

*Hab.* EUROPE<sup>1-4</sup>, Larva, *Cerasus mahaleb*<sup>1,3</sup>. West Indies—CUBA<sup>3,4</sup>.

#### 152. HYPONOMEUTA TRIANGULARIS, Mschl.

*Hyponomeuta triangularis*, Mschl. Ab. Senck. Nat. Ges. XV. 339-40, 354 (1890)<sup>1</sup>; Wlsm. Pr. Z. Soc. Lond. 1891, 532, 547 (1892)<sup>2</sup>; Hdm. Stett. Ent. Ztg. LVII. 10 (1896)<sup>3</sup>.

*Hab.* West Indies—PORTORICO<sup>1,2</sup>; ST. THOMAS, 17 III.<sup>3</sup>

### II. PLUTELLINÆ.

#### 51. PLUTELLA, Schrk.

#### 153. PLUTELLA CRUCIFERARUM, Z.

*Plutella cruciferarum*, Z. Stett. Ent. Ztg. IV. 281-3 (1843). *Plutella xylostella*, Stgr. & Wk. Cat. Lp. Eur. 281. No. 1626 (1871). *Plutella cruciferarum*, Stgr. & Wk. Cat. 425. No. 1626 (1871), &c. &c. *Plutella xylostella*, Mschl. Ab. Senck. Nat. Ges. XV. 341, 354 (1890)<sup>1</sup>. *Plutella cruciferarum*, Wlsm. Pr. Z. Soc. Lond. 1891, 518-9, 545 (1892)<sup>2</sup>.

*Hab.* All regions. West Indies—PORTORICO<sup>1,2</sup>.

It is certainly remarkable that I should not have received specimens of this cosmopolitan species from some of my correspondents!

### III. GLYPHIPTERYGINÆ.

#### 52. DITRIGONOPHORA.

(δῖς=doubly; τρίγωνον=a triangle; φερεῖν=to carry.)

Type *Ditrigonophora marmoreipennis*, Wlsm.

*Antennæ* (broken).

*Labial palpi* somewhat longer than the head, slender at the

base, diverging outwards; apical joint shorter than second, both triangularly clothed with appressed scales, giving a truncate appearance.

*Head* densely clothed above and in front.

*Fore wings* with the costa slightly arched, apex rounded, termen oblique, dorsum straight. *Neuration*: 12 veins all separate, 7 to apex.

*Hind wings* as broad as the fore wings, somewhat trapezoidal. *Neuration*: 7 veins all separate.

*Abdomen* somewhat flattened and laterally dilated.

*Hind tibiae* somewhat hairy above and beneath.

This genus is founded upon the peculiar shape of the palpi, which differ in form from those of all the genera of Micro-Lepidoptera with which I am acquainted.

#### 154. DITRIGONOPHORA MARMOREIPENNIS, sp. n.

*Antennae* cinereous. *Palpi* silvery grey above, the second joint shaded and the apical joint doubly barred beneath with brownish fuscous. *Head* ochreous, mixed with brownish fuscous. *Thorax* brownish fuscous, transversely banded with whitish. *Fore wings* pale ochreous, thickly mottled with brownish fuscous, which is separated into ill-defined spots and shades by slender silvery whitish undulating lines; a series of five or six slender silvery white oblique costal streaks, the outer one of the series being in the middle of an elongate brownish-fuscous patch, scarcely more than two-thirds of the wing-length from the base; a slender blackish line, slightly angulated at the apex, runs along the base of the greyish-ochreous cilia. Underside uniformly reddish grey. *Expl. al.* 5-7 mm. *Hind wings* and cilia reddish grey. Underside uniformly reddish grey. *Abdomen* reddish grey. *Legs* grey with white spurs, the tarsi spotted with white.

*Type*, ♂ Mus. Wlsm.

*Hab. West Indies*—GRENADA (Balthazar, 250 ft., windward side, 15 III.—H. H. Smith). Two specimens.

These specimens were unfortunately almost destroyed by an accident.

#### 53. TRAPEZIOPHORA, Wlsm.

##### 155. TRAPEZIOPHORA GEMMULA, Wlsm.

*Trapeziophora gemmula*, Wlsm. Pr. Z. Soc. Lond. 1891, 530-1, 547, Pl. XLI. 7 (1892)<sup>1</sup>.

*Hab. West Indies*—ST. VINCENT<sup>1</sup>.

#### 54. GLYPHIPTERYX, Hb.

= *ÆCHMIA*, Tr. (*nec auct.*); = *USSARA*, Wkr.

Curtis, Br. Ent. IV. Pl. 152 (1827), figured and specified *Pha-lena linneella*, Cl., as the type of *Glyphipteryx*. If he were quoting *Glyphipteryx* from Hübner's 'Verzeichniss,' he must have been

acquainted with that work very soon after its completion. If "*Glyphipteryx*, nob." of Curtis were an independent creation, the name could not stand, as it was already preoccupied by Hübner; and if he were restricting Hübner's genus *Glyphipteryx*, his action was inadmissible, for *Glyphipteryx linneella*, Hb. Verz. bek. Schm. 4101 (Hb. Tin. 436, Tort. 84), is *bergsträsserella*, F. (Stgr. Cat. 2306), a totally different insect from *linneella*, L. and Crt. \**Glyphipteryx*, Crt. (*nec* Hb.), must sink as a synonym of *Chrysoclista*, Stn.

#### 156. GLYPHIPTERYX CAUDATELLA, sp. n.

*Antennæ* brownish grey. *Palpi* slender; whitish. *Head* and *thorax* shining olive-brown. *Fore wings* shining olive-brown, with five short white costal streaklets; the first two beyond the middle oblique, tending to converge, emitting a steel-blue line running to the tornus; the third small and straight; the fourth and fifth, before the apex, tending to converge at their extremities, the outer one of the two nearly meeting a short subapical white streak below the dark ocellated apex, which contains a white spot within the circular line running through the cilia and emitting a long uncate dark apical streaklet; on the middle of the dorsum is a conspicuous white outwardly oblique cuneiform dash, its extremity slightly curved over, and before the tornus is a much shorter one, straighter and less conspicuous; cilia pale greyish. *Exp. al.* 8 mm. *Hind wings* and cilia greyish brown. *Abdomen* shining olive-brown. *Legs* olive-brownish, tarsi spotted and tipped with whitish.

*Type*, ♂ ♀ Mus. Wlsm.

*Hab.* West Indies—GRENADA (Chantilly Estate, 350 ft.; and Balthazar, 250 ft., windward side, 13–20 IV.—H. H. Smith). Three specimens.

#### 157. GLYPHIPTERYX PARADISEA, sp. n.

*Antennæ* brownish fuscous. *Palpi* smooth, slender, the second joint about as long as the apical; dirty whitish. *Head* and *thorax* brownish fuscous. *Fore wings* brownish fuscous at the base, richly ornamented beyond; with a broad triangular dorsal patch at one-third, its apex reaching to the upper edge of the cell; a short scarcely oblique steel-blue costal streak a little beyond it terminates on the cell in a space shaded with orange ochreous, which colour also intervenes between it and a second slightly inverted steel-blue costal streak slightly beyond the middle—the upper extremities of these streaks form white spots on the costa; from the middle of the dorsum arises a longer steel-blue streak with lilac reflections, its extremity equidistant between the ends of the costal streaks above it; thence the ground-colour becomes dark greyish fuscous, but is almost entirely superseded by a large brightly decorated patch of black occupying the whole tornal angle—its upper portion consisting of a steel-lilac spot, from which radiating lines of pale ochreous dots traverse the black space, its lower portion with three upright equidistant steel-lilac spots, the first larger than the other two; crossing the apical portion is a strong steel-blue streak

reaching the subapical incision on the termen, its costal extremity forming a white spot; beyond it, just before the extreme apex, is an outwardly oblique cuneiform white spot; cilia æneous, with a white spot at the incision. *Exp. al.* 9–10 mm. *Hind wings* dark brown, inclining to fuscous; cilia pale grey. *Abdomen* brownish grey. *Legs* greyish, with pale tarsal spots.

*Type*, ♂ ♀ Mus. Wlsm.

*Hab. West Indies*—GRENADA (La Force Estate, 350 ft.; and Balthazar, 250 ft., windward side, 15 IV.–5 V.—*H. H. Smith*). Four specimens.

### 55. BRENTHIA, Clem.

#### 158. BRENTHIA PAVONACELLA, Clem.

*Brenthia pavonacella*, Clem. Pr. Ac. Nat. Sc. Phil. XII. 172 (1860)<sup>1</sup>; Stn. Pr. Ac. Nat. Sc. Phil. XII. 434 (1860)<sup>2</sup>; Wkr. Cat. Lp. Ins. B. M. XXX. 844 (1864)<sup>3</sup>; Stn. Tin. N. Am. pp. vii, 37, 41, 134–5 (1872)<sup>4</sup>; Z. Verh. z.-b. Ges. Wien, XXV. 323–4 (1875)<sup>5</sup>; Hor. Soc. Ent. Ross. XIII. 174 (1877)<sup>6</sup>. *Brenthia pavonacella*, Chamb. Bull. U.S. G.G. Surv. IV. 132 (1878)<sup>7</sup>. *Brenthia pavonacella*, Chamb. Can. Ent. X. 76–7 (1878)<sup>8</sup>; Msehl. Ab. Senck. Nat. Ges. XV. 335, 354 (1890)<sup>9</sup>; Wlsm. Pr. Z. Soc. Lond. 1891, 529, 547 (1892)<sup>10</sup>.

*Hab. UNITED STATES* (Pennsylvania, Texas, Kentucky)<sup>1–5, 7, 9–10</sup>, VI.–VIII.<sup>1, 4, 5, 8</sup>. Larva, *Amphicarpa monoica*, VI.–VII., IX.<sup>3</sup> PANAMA—Chiriqui<sup>6, 9, 10</sup>. *West Indies*—(ANTILLES?<sup>6</sup>), PORTORICO<sup>9, 10</sup>. BRAZIL<sup>5, 9, 10</sup>.

### 56. GAURIS, Hb.

#### 159. GAURIS BIFERANA, Wkr.

n. syn. = *TRISTIS*, F. & R.; n. syn. = *CONTUBERNALIS*, Z.

*Gauris biferana*, Wkr. Cat. Lp. Ins. B.M. XXVIII. 418 (1863)<sup>1</sup>. *Gauris tristis*, F. & R. Reise Nov., Lep. Pl. 138. 15 (1875)<sup>2</sup>. *Simaethis contubernalis*, Z. Hor. Soc. Ent. Ross. XIII. 175–6, Pl. II. 63 (1877)<sup>3</sup>. *Gauris biferana*, Wlsm. Pr. Z. Soc. Lond. 1891, 529, 546 (1892)<sup>4</sup>.

*Hab. West Indies*<sup>3</sup>—SAN DOMINGO<sup>1, 4</sup>. BRAZIL (Amazons)<sup>2</sup>.

#### 160. GAURIS RIMULALIS, Z.

*Simaethis rimulalis*, Z. Verh. z.-b. Ges. Wien, XXV. 321 (1875)<sup>1</sup>; Hor. Soc. Ent. Ross. XIII. 174–5, Pl. II. 62 (1877)<sup>2</sup>. *Gauris rimulalis*, Wlsm. Pr. Z. Soc. Lond. 1891, 529, 546 (1892)<sup>3</sup>. *Simaethis rimulalis*, Hdm. Stett. Ent. Ztg. LVII. 10 (1896)<sup>4</sup>.

*Hab. West Indies*—CUBA<sup>2, 3</sup>; ST. THOMAS<sup>1, 3, 4</sup>, 10 IV.<sup>4</sup>

### 57. TORTYRA, Wkr.

TORTYRA, Wkr. Cat. Lp. Ins. B.M. XXVIII. 510 (1863).

= *CHOREGIA* (Z.), F. & R. Reise Nov., Lp. expl. Pl. 140 (1875); Z. Hor. Soc. Ent. Ross. XIII. 191–2 (1877).



161. *TORTYRA AURIFERALIS*, Wkr.

= *AUROFASCIANA*, Snell.<sup>7</sup>; = *IGNITA*, Z.<sup>7</sup>

*Tortyra auriferalis*, Wkr. Cat. Lp. Ins. B. M. XXVIII. 510-11 (1863)<sup>1</sup>. *Simaethis aurofasciana*, Snell. Tijd. v. Ent. XVIII. 73, 74-6, Pl. VI. 7 (1875)<sup>2</sup>. *Simaethis (Chordates) aurofasciana*, Snell. Tijd. v. Ent. XX. 48-9 (1876)<sup>3</sup>. *Choregia ignita*, Z. Hor. Soc. Ent. Ross. XIII. 195-6 (1877)<sup>4</sup>. *Choregia (Simaethis) aurofasciana*, Snell. Tijd. v. Ent. XXVIII. 15 (1885)<sup>5</sup>. *Choregia aurofasciana*, Mschl. Ab. Senck. Nat. Ges. XV. 335, 354 (1890)<sup>6</sup>. *Tortyra auriferalis*, Wlsm. Pr. Z. Soc. Lond. 1891, 528-9, 546 (1892)<sup>7</sup>; Hdm. Stett. Ent. Ztg. LVII. 10 (1896)<sup>8</sup>.

*Hab.* West Indies—CUBA<sup>4,7</sup>; SAN DOMINGO<sup>1,7</sup>; PORTORICO<sup>6,7</sup>; ST. CROIX<sup>8</sup>, 22 XI. (*Pontoppidan*); ST. MARTIN<sup>2,6,7</sup>; ST. VINCENT<sup>7</sup>.

[In my last paper (*l. c.* No. 7, 529) I suggested that *Choregia fulgens*, F. & R., was probably a variety. It may therefore be advisable to put on record an account of the life-history of that species. In the Oxford Museum are two specimens of *fulgens* with the following label attached:—

“Arica, PERU, Kenderdine. Flying in sun about low fig-trees. Larva in the young shoots of the-fig tree, where it changes, spinning a strong white silken cocoon. It is of a dull brownish-red colour with the feet [*black?*] and a row of small black dots on each segment, from each of which issues a fine hair.”

This note ought to enable collectors in the West Indies to breed *auriferalis*, Wkr., and to prove whether it is distinct or a variety of *fulgens*.

## VIII. TORTRICIDÆ.

I. *OLETHREUTINÆ*, Hb.

= *OLETHREUTÆ*, Hb.; = *GRAPHOLITHINÆ*, Fern.; = *EPIBLEMIDÆ*, Meyr.; = *OLETHREUTINÆ*, Wlsm. (*emend.*).

58. *BACTRA*, Stph.

= § *APHELIA*, Stph.; = *LEPTIA*, Gn.

162. *BACTRA LANCEOLANA*.

*Tortrix lanceolana*, Hb. Samml. Eur. Schm. VII. (Tort.) Pl. XIII. 80 (1800)<sup>1</sup>. *Ancylis lanceolana*, Hb. Verz. bek. Schm. 376. No. 3614 (1826)<sup>2</sup>. *Aphelia lanceolana*, Stgr. & Wk. Cat. Lp. Eur. 251. No. 1006 (1871)<sup>3</sup>, &c. *Bactra lanceolana*, Fern. Tr. Am. Ent. Soc. X. 28-9. No. 163 (1882)<sup>4</sup>; Wlsm. Pr. Z. Soc. Lond. 1891, 501, 543 (1892)<sup>5</sup>.

*Hab.* EUROPE<sup>3,5</sup>, AFRICA<sup>5</sup>, ASIA<sup>5</sup>, AUSTRALIA<sup>5</sup>, NEW ZEALAND<sup>5</sup>, UNITED STATES<sup>4,5</sup>. West Indies—ST. THOMAS, 22-30 III (*Hede-mann*); ST. VINCENT<sup>5</sup>; GRENADA (windward side—Balthazar, 250 ft., La Force Estate, 350 ft., and Grand Etang, 1900 ft.,

1 IV.-30 V.; leeward side—Mount Gay Estate, 300 ft., 25-30 VIII.—*H. H. Smith*). S. AMERICA.

I have not thought it necessary to give the full synonymy of this widely distributed species.

#### 59. ENARMONIA, Hb.

Type, *Tortrix woeberiana*, Schiff. (Steph. 1839).

#### 163. ENARMONIA JAMAICANA, sp. n.

*Antennæ* shortly biciliate, and serrate towards the apex; cinereous. *Palpi* porrect, extending nearly the length of the head beyond it; pale cinereous, with a darker shade beneath the second and third joints. *Head* dirty fawn whitish. *Thorax* dull cinereous, speckled and blotched with hoary whitish. *Fore wings* dull cinereous, speckled and blotched with hoary whitish; a basal patch, extending a little beyond one-third, throws out an acutely angulated projection above the fold, almost bisecting an outwardly angulated dirty-whitish median fascia, which is separated from the terminal portion of the wing by an angulated band of the same darker ground-colour as the basal patch; this band commences about the middle of the costa in one of a series of about twelve outwardly oblique costal streaks, it is produced and dilated outwards to the end of the cell, whence it is abruptly bent back to the dorsum, becoming wider in its descent; this is bounded outwardly by a shining silvery whitish line, especially marked before the ocelloid patch, which contains six or seven black transverse lines, and is also terminated on its outer edge by a narrow, shining, silvery band; on the apical portion of the costa a series of pale lines between the dark costal streaks assume a silvery hue, and one of them is produced to the termen below the apex, and at the extreme apex is a dark spot, corresponding in colour with the costal streaklets; cilia mottled greyish cinereous. *Exp. al.* 14 mm. *Hind wings* pale greyish brown; cilia whitish cinereous. *Abdomen* and *legs* pale cinereous.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—JAMAICA (Kingston, VI.—*Cockerell*). Unique.

This species appears to be nearly allied to *Grapholitha duodecemstriata*, Wlsm., but is somewhat smaller and has a more pronounced basal patch and fewer dark lines in the ocelloid patch.

#### 60. EPISIMUS, Wlsm.

EPISIMUS, Wlsm. Pr. Z. Soc. Lond. 1891, 501-2, Pl. XLI. 3 a-b (1892).

The following addition should be made to my description of this genus :—

Thorax smooth; ♂ and ♀ with an expansible hair-pencil (arising from a point near the head) below the base of the fore wing. When not expanded this hair-pencil is appressed to the

side of the thorax beneath the wing and may easily be overlooked, but when spread out it is very noticeable, appearing like thistle-down at the base of the costa. The occurrence of this character in *both* sexes may suggest a different train of thought to those who have enunciated various theories to account for the functional utility of such structures hitherto observed in the male sex only.

This observation is founded on the examination of many specimens belonging to several described and undescribed Transatlantic species.

#### 164. EPISIMUS TRANSFERRANUS, Wkr.

[TRANSFERRANUS, Wkr. + TRANSFERRANUS, Wkr.

*Carpocapsa transferrana*, Wkr. Cat. Lp. Ins. B.M. XXVIII. 398 (1863)<sup>1</sup>.  
*Episimus transferrana*, Wlsm. Pr. Z. Soc. Lond. 1891, 502, 543 (1892)<sup>2</sup>.

*Hab.* BRAZIL (*Ega*)<sup>1, 2</sup>.]

TRANSFERRANUS, Wkr. + VINCENTANUS, Wlsm.

*Episimus transferrana*, Wkr. + *vincentana*, Wlsm. Pr. Z. S. Lond. 1891, 502, 543, Pl. XLI. 3 (1892)<sup>1</sup>.

*Hab.* West Indies—ST. VINCENT<sup>1</sup>.

#### 165. EPISIMUS AUGMENTANUS, Z.

*Grapholitha (Hedya) augmentana*, Z. Hor. Soc. Ent. Ross. XIII. 160-1 (1877)<sup>1</sup>. *Episimus augmentana*, Wlsm. Pr. Z. Soc. Lond. 1891, 502, 543 (1892)<sup>2</sup>.

*Hab.* West Indies—CUBA<sup>1, 2</sup>; GRENADA (Balthazar, 250 ft., windward side, 20 IV.—*H. H. Smith*).

#### 166. EPISIMUS NESIOTES, sp. n.

*Antennae*: ♂, stout, slightly pubescent; bone-colour, with a rufous tinge towards the base. *Palpi* somewhat club-shaped, the apical joint scarcely visible; bone-white on their inner sides, rufous externally. *Head* reddish ochreous; face rufous, a transverse whitish band between the eyes. *Thorax* whitish, anteriorly margined with reddish brown. *Fore wings* mottled with reddish brown and bone-white with some admixture of bluish grey; the bone-white is especially noticeable in a large elongate dorsal patch extending to the fold, transversely barred and thus almost obliterated on the basal half; it is also noticeable in a series of short outwardly oblique costal streaks, and at the outer end of the cell in an inwardly curved line of which the lower extremity reaches the upper angle of the somewhat indistinct ocelloid patch (containing two black dots set in rosy-white preceded by a steel-grey shade); some oblique slender steel-grey lines extend outwards from the lower extremities of the pale costal streaks: cilia reddish brown mixed with bone-grey. *Exp. al.* ♂ 14 mm., ♀ 17 mm. *Hind wings* shining brownish grey, with somewhat paler cilia. *Abdomen* brownish grey. *Legs* bone-whitish.

*Type*, ♂ ♀ Mus. Wlsm.

*Hab. West Indies*—ST. CROIX, 4 V.—15 VI. (*Gudmann, Hedemann, Pontoppidan*).

“Die 16-füssige Raupe lebt auf *Euphorbia hyperifolia* zwischen zusammengespinnenen Blättern; sie ist cylindrisch, zwischen den Leibsegmenten stark eingeschnürt, die Grundfarbe gelbgrün, auf dem ersten Segment mit vier kleinen rothen Punkten, auf allen übrigen Segmenten je ein rother Gürtel ringsum das Segment in welchem die rothen Punkte etwas dunkler erscheinen und mit feinen Haaren besetzt; Kopf herzförmig, gelbbraun, die Mundtheile etwas dunkler; Füße und Aftersegment unbezeichnet.” (*Gudmann*.)

Closely allied to *argutanus*, Clem., but differing in the distinctly apparent dorsal patch and in its paler hind wings.

#### 167. EPISIMUS ARGUTANUS, Clem.

= *ALLUTANA*, Z.<sup>4</sup>

*Bactra*? *argutana*, Clem. Pr. Ac. Nat. Sc. Phil. XII. 358 (1860)<sup>1</sup>. *Grapholitha (Hedya) allutana*, Z. Verh. z.-b. Ges. Wien, XXV. 295–6, Pl. IX. 27 (1875)<sup>2</sup>. *Bactra*? *argutana*, Pack. U.S. Dept. Intr. (Ent. Com.), Bull. VII. 69 (1881)<sup>3</sup>. *Semasia argutana*, Fern. Tr. Am. Ent. Soc. X. 45. No. 319 (1882)<sup>4</sup>. *Bactra*? *argutana*, Pack. U.S. Dept. Agr., Rp. V. 282 (1890)<sup>5</sup>. *Semasia argutana*, Pack. U.S. Dept. Agr., Rp. V. 668 (1890)<sup>6</sup>; Mft. Can. Ent. XXIII. 168 (1891)<sup>7</sup>.

*Hab. CANADA*<sup>7</sup>; UNITED STATES<sup>1-6</sup>, 9–26 VII.<sup>2</sup> Larva, *Hamelis virginica*<sup>1,3-6</sup>; *Rhus glabra*<sup>1,3-5</sup>; *Crataegus tomentosa*<sup>1,3-5</sup>; *Ulmus*<sup>1,3-5</sup>. *West Indies*—ST. CROIX, 4 V.—15 VI. (*Hedemann, Pontoppidan*); ST. THOMAS, 18 III. (larva *Euphorbia* sp.?, *Gudmann*); ST. LUCIA (Point Michell, 25 V.); GRENADA (Balthazar, 250 ft., windward side, 15–27 IV.—*H. H. Smith*).

Mr. Gudmann's specimen is labelled as bred, but the name of the food-plant is not indicated. Baron von Hedemann informs me that it was bred from a species of *Euphorbia*, but his note may possibly have referred to *nesiotes*.

#### 168. EPISIMUS SUBMICANS, sp. n.

*Antennæ* fawn-brown. *Palpi* rough, apical joint depressed, short, partly concealed; greyish-fawn. *Head* fawn-ochreous. *Thorax* fawn-brown; underside shining silvery white. *Fore wings* whitish cinereous, mottled and blotched with umber-brown mixed with fuscous; basal patch scarcely indicated, but traceable by two dark costal spots with smaller ones between them, by a small dark umber-brown patch resting on the fold, and by another nearer to the base beneath the fold; a broad triangular costal patch commencing before and extending beyond the middle is composed of dark umber-brown with fuscous lines running through it, a band of rather shining steel-grey dividing it into two parts obliquely, this patch is diffused and produced irregularly to the fold, above



which it is somewhat dilated; the apical portion of the wing contains two umber-brown costal streaks, the first of which sends out a narrow chestnut-brown line to the termen beneath the apex, the apex itself being dark umber-brown mixed with fuscous scales; an obliquely ascending patch of the same colour, also narrowly dark-margined, rests at its base on the lower half of the termen; an umber-brown patch within the tornus is preceded and followed by a silvery-grey space; cilia rich chestnut-brown along their base, their extremities being dark fuscous. *Exp. al.* 14-16 mm. *Hind wings* greyish brown; cilia paler, shaded along their base. *Abdomen* greyish brown. *Legs* whitish cinereous; hind tibiae with a tuft of hairs beneath (on their inner sides, along their anterior half); middle femora shining white.

*Type*, ♂ Mus. Wlsm.

*Hab. West Indies*—GRENADA (Balthazar, 250 ft., windward side, 15 III.-20 IV.: nine specimens.—*H. H. Smith*).

This species varies considerably in the colour of the fore wings, in some specimens assuming a rich reddish brown (almost ferruginous) tint, the thorax matching the colour of the basal half of the wing.

#### 61. CACOCHARIS, Wlsm.

##### 169. CACOCHARIS ALBIMACULA, Wlsm.

*Cacocharis albimacula*, Wlsm. Pr. Z. Soc. Lond, 1891, 503-4, 543, Pl. XLI. 4 (1892)<sup>1</sup>.

*Hab. BRAZIL*<sup>1</sup> (Ceara, VIII.—*Leech*, Mus. Wlsm.). *West Indies*—ST. VINCENT<sup>1</sup>.

#### 62. ANCYLIS, Hb.

= *PHOXOPTERIS*, Tr.; = *PHOXOPTERYX*, Sdf.

##### 170. ANCYLIS VIRIDIDORSANA, Mschl.

*Phoxopteryx virididorsana*, Mschl. Ab. Senck. Nat. Ges. XV. 334, 354 (1890)<sup>1</sup>. *Phoxopteris virididorsana*, Wlsm. Pr. Z. Soc. Lond. 1891, 504, 543 (1892)<sup>2</sup>.

*Hab. West Indies*—PORTORICO<sup>1, 2</sup>.

#### 63. THIODIA, Hb.

*Type*, *Tortrix citrana*, Hb. (Stph.).

THIODIA, Hb. Verz. bek. Schm. 391 (1826); Stph. List Br. An. B.M. X. Lp. 63 (1852).

= \**CYDIA* (Hb. *partim*), Meyr. HB. Br. Lp. 482-3 (1895) (*nec* Stph.).

= *SEMASIA*, Stgr. & Wk. Cat. (*partim*); Fern.

Hübner proposed *Thiodia* for his two species *citrana* and *sulphurana* (= *rhododendronalis*, Dp.); and Stephens in 1852 constituted *citrana* the type. The name *Cydia* cannot be employed for this genus, as its type is *Tinea pomonella*, L. (*vide* p. 130).

171. *THIODIA AUTOCHTHONES*, sp. n.

*Antennae* and *palpi* mouse-grey, the latter slightly paler. *Head* and *thorax* mouse-grey. *Fore wings* mouse-grey, with a series of oblique geminated white-grey costal streaks terminating in an inverted spot of the same colour before the apex; on the outer half these streaks are produced outwards in leaden-grey lines extending to the margin of the ochreous ocellated patch, which is bounded by a leaden-grey patch on its inner side, and on its outer by a less wide white-grey subovate spot lying between it and the termen, which is also ochreous throughout bounded by a slender dark line at the base of the cilia, which are slightly indented below the apex; the ocelloid patch contains two black dots; about the middle of the dorsum arises an inconspicuous leaden-grey patch, and the surface of the wing between the markings above described is minutely speckled with ochreous and fuscous scales; cilia shining leaden grey. *Exp. al.* 8 mm. *Hind wings* brownish grey, with a slight greenish iridescence in certain lights; cilia whitish grey, divided by a slight shade-line near their base. *Abdomen* leaden grey, with two darker cross-bands near the base; anal tuft paler. *Legs* shining leaden grey.

*Type*, ♂ Mus. Hedemann; ♀ Mus. Wlsm.

*Hab.* West Indies—ST. CROIX, 30 IV.–27 V. (*Gudmann, Hedemann, Pontoppidan*); ST. THOMAS, 10–18 IV. (*Gudmann, Hedemann*). Six specimens.

64. *EUCOSMA*, Hb.

*Type*, *Eucosma circulana*, Hb.

*EUCOSMA*, Hb. Zutr. II. 28. figs. 363–4 (1823); Verz. bek. Schm. 374 (1826); Wkr. Cat. Lp. Ins. B.M. XXVIII. 423 (1863) [*nec* Meyr. HB. Br. Lp. 457–8 (1895)]; = *CALLIMOSEMA*, Clem. Pr. Ent. Soc. Phil. V. 140–1. fig. 9 (1865).

= *EPIBLEMA*, Hb. Verz. bek. Schm. 375–6 (1826); Stph. III. Br. Ent., Haust. IV. 92–3 (1834), 418 (1835); List Br. An. B.M., X. Lp. 46–7 (1852); Meyr. HB. Br. Lp. 490 (1895). *Type*, *Tinea fænella*, L. (Stph.).

= *PÆDISCA*, Tr. Schm. Eur. VIII. 188 (1830); Dp. Hist. Nat. Lp. Fr. IX. 22–3 (1834); Hein.; Stgr. & Wk.; Fern. &c. *Type*, *Tortrix solandriana*, L. (Dp.).

172. *EUCOSMA LONGIPALPANA*, Mschl.

*Grapholitha (Pædisca) longipalpana*, Mschl. Ab. Senck. Nat. Ges. XV. 333, 354 (1890)<sup>1</sup>. *Pædisca longipalpana*, Wlsm. Pr. Z. Soc. Lond. 1891, 506, 544 (1892)<sup>2</sup>.

*Hab.* West Indies—PORTORICO<sup>1,2</sup>.

173. *EUCOSMA STRENUANA*, Wkr.

= *EXVAGANA*, Wkr.<sup>5</sup>; = *FLAVOCELLANA*, Clem.<sup>6</sup>; = *SUBVERSANA*, Z.<sup>6</sup>

*Grapholitha strenuana*, Wkr. Cat. Lp. Ins. B.M. XXVIII. 383

(1863)<sup>1</sup>. *Grapholita exvagana*, Wkr. Cat. Lp. Ins. B.M. XXVIII. 383-4 (1863)<sup>2</sup>. *Steganoptycha flavocellana*, Clem. Pr. Ent. Soc. Phil. V. 138 (1865)<sup>3</sup>. *Grapholitha subversana*, Z. Verh. z.-b. Ges. Wien, XXV. 318-9 (1875)<sup>4</sup>. *Pædisca strenuana*, Wlsm. Ill. Lp. Het. B.M. IV. 52, Pl. LXXII. 4 (1879)<sup>5</sup>; Fern. Tr. Am. Ent. Soc. X. 40. No. 278 (1882)<sup>6</sup>.

*Hab.* NORTH AMERICA<sup>1, 2, 5</sup>—UNITED STATES<sup>3, 4, 6</sup>, 27 VI.—3 VII.<sup>4</sup> [larva, *Ambrosia*<sup>6</sup>]. **West Indies**—SAN DOMINGO (Puerto Plata, 16 V.—Gudmann).

## 65. CROCIDOSEMA, Z.

### 174. CROCIDOSEMA PLEBEIANA, Z.

=*ALTHEANA*, Mn.<sup>15</sup>; (= *LAVATERANA*, Mill.<sup>8</sup>; = *PEREGRINANA*, Mschl.<sup>8</sup>).

*Crocidosema plebejana*, Z. Is. 1847, 721-2<sup>1</sup>. *Penthina altheana*, Mn. Verh. z.-b. Ges. Wien, V. 555-6 (1855)<sup>2</sup>. *Grapholitha altheana*, Ld. Wien. Ent. Mts. III. 343 (1859)<sup>3</sup>. *Crocidosema plebejana*, Ld. Wien. Ent. Mts. III. 367 (1859)<sup>4</sup>. *Pædisca lavaterana*, Mill. Ic. I. 290-3, Pl. XXXIV. 9-13 (1863)<sup>5</sup>. *Steganoptycha altheana*, Hein. Schm. Deutsch. Tort. 241 (1863)<sup>6</sup>. *Grapholitha peregrinana*, Mschl. Berl. Ent. Zts. X. 139-40 (1866)<sup>7</sup>. *Steganoptycha altheana*, Stgr. & Wk. Cat. 260. No. 1221 (1871)<sup>8</sup>. *Crocidosema plebejana*, Stgr. & Wk. Cat. 263. No. 1269 (1871)<sup>9</sup>. *Steganoptycha altheana*, Mill. Cat. Lp. Alp. Mar. 290 (1875)<sup>10</sup>. Hrtm. MT. Münch. Ent. Ver. III. 191. No. 1221 (1879)<sup>11</sup>. *Crocidosema plebeiana*, Meyr. Pr. Lin. Soc. N.S.W. VI. 659-60 (1881)<sup>12</sup>. *Steganoptycha altheana*, M.-P. & F.-T. Nat. Sic. VIII. 158 (1889)<sup>13</sup>. *Crocidosema plebeiana*, Wlsm. Pr. Z. Soc. Lond. 1891, 506, 544 (1892)<sup>14</sup>; Rag. Ann. Soc. Ent. Fr. LXIII. 221. No. 1221 (1894)<sup>15</sup>.

*Hab.* EUROPE<sup>1-15</sup> [larva, *Althea rosea*<sup>2, 6, 11, 12</sup>; *Lavatera arborea*<sup>5, 11, 12</sup>, IX.-II.<sup>11</sup>; *Imago*, II.-V.<sup>11</sup>, IX.<sup>2, 6</sup>]. AUSTRALIA, XII.-III., VII.<sup>12, 14</sup>. **West Indies**—ST. CROIX, 5-31 V. (*Hedemann*, *Pontopidan*); ST. THOMAS, 18-23 III. (*Gudmann*); ST. VINCENT<sup>14</sup>; GRENADA (windward side—Balthazar, 250 ft., La Force Estate, 350 ft., and Chantilly Estate, 350 ft., 30 III.-4 V.; leeward side—Mount Gay Estate, 300 ft., 1-5 X., *H. H. Smith*). Bred by Mr. Gudmann, but the plant not identified. BRAZIL<sup>14</sup>; PERU<sup>14</sup>; ARGENTINE REPUBLIC<sup>14</sup>.

## 66. STREPSICRATES, Meyr.

§ *STREPSICEROS*, Meyr. Pr. Linn. Soc. N.S.W. VI. 678-9 (1882). *STREPSICRATES*, Meyr. Tr. N. Z. Inst. XX. 73 (1887).

### 175. STREPSICRATES SMITHIANA, Wlsm.

*Strepsicrates smithiana*, Wlsm. Pr. Z. Soc. Lond. 1891, 506-7, 544 (1892)<sup>1</sup>.

*Hab.* **West Indies**—ST. CROIX, 9 V. (*Hedemann*); DOMINICA<sup>14</sup>;

ST. LUCIA (Point Michell, Castle Bruce, 15 II., 30 IX.); ST. VINCENT<sup>1</sup>; GRENADA (Balthazar, 250 ft., windward side, 5-20 IV.—H. H. Smith).

Baron von Hedemann observes that this species was bred by Mr. Gudmann, but does not mention the name of the plant. No specimen was included in the collection sent to me by Mr. Gudmann.

67. BALBIS, g. n.

(βαλβίς=a starting point.)

Type, *Carpocapsa assumptana*, Wkr.

*Antennae* less than  $\frac{2}{3}$ , stout, simple.

*Palpi* porrect; second joint slightly curved, moderately clothed; apical joint blunt, exposed, projecting forward.

*Haustellum* short.

*Head* roughly clothed above.

*Thorax* smooth, with hair-pencil arising beneath base of costa (appressed to side, but probably expansible, as in *Episimus*).

*Fore wings*, ♂ without a costal fold; costa slightly arched at base, somewhat straight beyond, thence rounded to the depressed apex, termen not sinuate, tornus rounded. *Neuration*: 12 veins, all separate; 2 from before three-fourths, 7 to termen.

*Hind wings* evenly rounded, not sinuate beneath apex. *Neuration*: 8 veins; 6 and 7 remote at origin, parallel; 8 approximated to radius; 3 and 4 connate; 5 almost straight, but somewhat approximated to 4.

*Legs*, hind tibiae smooth.

Agreeing with *Dichrorampha* and *Lipoptycha* in having 6 and 7 of the hind wings parallel, but differing in the palpi and in the unisinate termen, and probably intermediate between these genera and *Laspeyresia*, Hb. (= *Grapholitha*, HS.).

176. BALBIS ASSUMPTANA, Wkr.

*Carpocapsa assumptana*, Wkr. Cat. Lp. Ins. B.M. XXVIII. 406 (1863)<sup>1</sup>.

*Hab.* BRAZIL (Ega)<sup>1</sup>. West Indies—GRENADA (Grand Etang, 1900 ft., windward side, 30 V.—H. H. Smith).

177. BALBIS ALBICAPITANA, Wlsm.

*Coptoloma*? *albicapitana*, Wlsm. Pr. Z. Soc. Lond. 1891, 505-6, 544 (1892)<sup>1</sup>.

*Hab.* West Indies—ST. VINCENT<sup>1</sup>.

178. BALBIS? LIVENS, Wlsm.

*Grapholitha livens*, Wlsm. Pr. Z. Soc. Lond. 1891, 504-5, 543 (1892)<sup>1</sup>.

*Hab.* West Indies—ST. VINCENT<sup>1</sup>.

This species is probably rightly referred to this genus, but the type was headless when received.



## 179. BALBIS FIGURANA, Z.

*Grapholitha* (*Coptoloma*?) *figurana*, Z. Hor. Soc. Ent. Ross. XIII. 163-5, Pl. II. 55 (1877)<sup>1</sup>. *Coptoloma* ?*figurana*, Wlsm. Pr. Z. Soc. Lond. 1891, 505, 544 (1892)<sup>2</sup>.

*Hab. West Indies*—ST. THOMAS<sup>1,2</sup>, 17 XII.<sup>1</sup>, 18 IV. (one specimen, Gudmann).

## 180. BALBIS? EXCITANA, Mschl.

*Grapholitha excitana*, Mschl. Ab. Senck. Nat. Ges. XV. 333-4, 354 (1891)<sup>1</sup>. *Grapholitha* ?*excitana*, Wlsm. Pr. Z. Soc. Lond. 1891, 505, 543 (1892)<sup>2</sup>.

*Hab. West Indies*—PORTORICO<sup>1,2</sup>.

I am unacquainted with this species, but it probably belongs here, as the genus to which Möschler referred it does not appear to occur in the West Indies.

## 68. EUCELIS, Hb.

Type, *Pyralis aurana*, F. (Hb.).

EUCELIS, Hb. Verz. bek. Schm. 394 (1826) ; = *TRYCHERIS*, Gn. Ind. Méth. 56 (1845), *vide* Wlsm. Tr. Ent. Soc. Lond. 1895, 516-7.

= \**EPINOTIA*, MEYR. (*nec* Hb.) HB. Br. Lp. 516 (1895).

In 1834 Stephens constituted *Paridisca simulana*, Hb., the type of *Epinotia*, and Meyrick's genus does not contain any of Hübner's types.

## 181. EUCELIS? LUSTROMARGINATA, sp. n.

*Antennae* stone-grey. *Head* and *palpi* stone-ochreous. *Fore wings* stone-colour, transversely striated with brownish fuscous, giving the whole wing a speckled and streaked appearance; among many more slender lines two may be especially distinguished, although both broken and ill-defined, the first commencing on the costa at one-third from the base, angulated outwards above the middle and reverting to the dorsum almost at a right angle; the second commencing on the middle of the costa, also outwardly rectangular above the middle, nearly parallel with the first, but slightly diverging toward the dorsum, which it reaches before the commencement of the cilia; between these lines is a lustrous steel-grey sheen above the middle; a series of geminated white streaklets along the costa, with some lustrous lines and a row of 4 or 5 black spots along the termen, the upper one being at the apex; cilia shining steel-grey. *Exp. al.* 9 mm. *Hind wings* greyish fuscous, strongly iridescent in certain lights; cilia shining steel-grey. (Underside of both wings brilliantly iridescent.) *Abdomen* grey. *Legs* greyish.

Type, ♀ Mus. Gudmann.

*Hab. West Indies*—ST. CROIX, 4 V. (*Hedemann*). Unique.

In the absence of the male this species cannot be referred with certainty to the genus *Eucelis*, and it differs from the type in having veins 3 and 4 of the hind wings coincident.

## 69. CYDIA, Hb.

Type, *Tinea pomonella*, L. (Stph.).

CYDIA, Hb. Verz. bek. Schm. 375 (1826); Stph. Ill. Br. Ent., Haust. IV. 119 (1834), 418 (1835).

= *CARPOCAPSA*, Tr. Schm. Eur. VII. 231 (1829); Hein.; Stgr. & Wk. Cat.; Meyr. &c.

Hübner proposed the genus *Cydia* for the three species—*pomonella*, L. (= *pomonana*, Hb.), *aspidiscana*, Hb., and *hohenwartiana* (Schiff.), Tr. (= *monetulana*, Hb.). Treitschke (Schm. Eur. VII. 231 [1829]) placed *pomonella* in his genus *Carpocapsa*, and (l. c. 232) *aspidiscana* and *hohenwartiana* in *Grapholitha*, Tr. One of these two genera must fall as a synonym of *Cydia*. Stephens (Ill. Br. Ent., Haust. IV. 119 [1834]), writing under the heading *Carpocapsa*, said:—"The three first species" (i.e. *pomonella*, *splendana*, and *grossana*) "form the true *Carpocapsa* of Treitschke—*Cydia* of Hübner." The only species common to Hübner and Stephens, and which consequently was regarded as Hübner's type, is *pomonella*, L. Stephens [l. c. 119–20 (1834), 418 (1835)] under *Cydia* includes both *pomonella* and *aspidiscana*; but he had already indicated that he did not regard *aspidiscana* as the type, and in List Br. An. B.M. X. Lp. 54 (1852), *pomonella* appears as the sole type of *Cydia*, the subsequent reference of *aspidiscana* to *Cydia* (l. c. 93) is ruled out, *pomonella* having already been constituted the type.

## 182. CYDIA? FLAVICOLLIS, sp. n.

*Antennæ* stone-grey. *Palpi* projecting slightly beyond the head, of uniform thickness throughout, the second joint not brush-like; canary-yellow. *Head* and face canary-yellow. *Thorax* stone-grey, anteriorly with a lilac iridescence extending over the tegulæ. *Fore wings* stone-grey, with a slight lilac tinge along the costa nearly to its middle, beyond the middle obliquely banded with tawny fuscous and white, the latter appearing in about six wedge-shaped streaks of which the outer one is curved to the termen, reaching a slight indentation below the apex; an elongate tawny fuscous patch stands erect a little beyond the middle of the dorsum, its inner edge pale-margined; it is terminated at its upper extremity by two short ochreous lines, which separate it at the upper edge of the cell from the first oblique costal shade; beyond this erect patch the lower two-thirds of the wing-surface are transversely streaked with silvery metallic, preceding a triangular patch of reddish ferruginous, extending upwards from the tornus along the termen, and slightly tinging the extreme apex; cilia shining silvery-grey. *Underside* strongly iridescent, with five white costal streaks showing through. *Exp. al.* 15 mm. *Hind wings* brownish fuscous; cilia pale bluish grey. *Underside* strongly iridescent. *Abdomen* dark leaden grey. *Legs* bone-whitish, tarsal joints banded with fuscous.

*Type*, ♀ Mus. Hedemann.

*Hab. West Indies*—ST. THOMAS, 9 III. (*Hedemann*). Unique.

Though I have little doubt that this species belongs to the genus *Cydia*, it cannot be referred there with certainty in the absence of the male.

## 70. HELIGMOCERA, Wlsm.

### 183. HELIGMOCERA CALVIFRONS, Wlsm.

*Heligmocera calvifrons*, Wlsm. Pr. Z. Soc. Lond. 1891, 508, 544, Pl. XLI. 5 a-d (1892)<sup>1</sup>.

*Hab. West Indies*—ST. VINCENT<sup>1</sup>; GRENADA (Balthazar, 250 ft., windward side, 15 III.—8 V.—*H. H. Smith*).

## II. TORTRICINÆ.

### 71. OXYGRAPHA, Hb.

§ *PERONEA*, Crt. Br. Ent. I. expl. Pl. XVI. (1825). Type, *Pyralis cristana*, F. (Crt.).

† *OXYGRAPHA*, Hb. Verz. bek. Schm. 386 (1826). Type, *Tortrix literana*, L. (Hb.).

‡ *OXYGRAPHA*, Wilk. Br. Tortr. 160 (1859).

*TERAS*, Hein.; Stgr. & Wk. Cat.; Fern. &c. (*nec* Tr. + Dp.).

*ACALLA*, Meyr. HB. Br. Lp. 519–20 (1895) (*nec* Hb. + Stph.).

*Peronea*, Crt., is the oldest name for the genus, but it is too close to *Peronea*, Poli, 1795. *Oxygrapha*, Hb. (corrected to *Oxygrapha* by Wilkinson), was monotypical from its publication, and should therefore be chosen in preference to any other name proposed for species of this genus by Hübner. *Teras*, Tr., is synonymous with *Rhacodia*, Hb., its type being *caudana*, F., following Curtis (1831) and Duponchel (1834), the latter citing the type. The type of *Acalla*, Hb., was fixed as *Tortrix opthalmica*, Hb. (a *Pedisca*), by Stephens in 1834 (*vide* Ill. IV. 141).

The three following species differ from the type in having 3 and 4 of the fore wings stalked and 3 and 4 of the hind wings coincident; at present I am unwilling to separate them generically from *Oxygrapha*.

### 184. OXYGRAPHA NEGANS, sp. n.

*Antennæ* brownish. *Palpi* short, suberect, apical joint exposed, second joint loosely clothed; rusty brownish. *Head* rust-brown. *Thorax* olive-grey with a greenish tinge. *Fore wings* olive-grey with a greenish tinge, the costa shining pale bronzy-brown throughout, the termen and cilia the same; an oblique series of raised fuscous scales extends from the costa before the middle in a slightly outwardly bowed line towards the middle of the dorsum; this is followed beyond the middle by ill-defined, scarcely visible, parallel lines of pale brown (not iridescent, but appearing only in certain lights). *Exp. al.* 16 mm. *Hind wings* trapezoidal; umber-brown, with a pale line along the base of the umber-brown cilia,

which are grey on their outer half. *Abdomen* umber-brown. *Legs* cinereous.

*Type*, ♀ Mus. Gudmann.

*Hab.* West Indies—HAYTI (Port-au-Prince, 22 V.—Gudmann). One specimen.

185. *OXYGRAPHA MONOCHROMA*, sp. n.

*Antennæ* fuscous. *Palpi* suberect, apical joint exposed; reddish brown, slightly paler than the colour of the head. *Head* reddish brown. *Thorax* brownish fuscous: underside pale cinereous. *Fore wings* reddish brown, with slightly paler mottlings on the outer half, and a slight shining greyish shade preceded by a slender ferruginous line before the termen; cilia reddish brown. *Exp. al.* 12 mm. *Hind wings* dark fuscous. *Abdomen* dark fuscous: underside pale cinereous. *Legs* cinereous shaded with fuscous.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—HAYTI (Port-au-Prince, 22-24 V.—Gudmann). Two specimens.

186. *OXYGRAPHA ROTUNDIPENNIS*, sp. n.

*Antennæ* cinereous. *Palpi* projecting less than the length of the head beyond it; dusky cinereous. *Head* cinereous. *Thorax* tawny cinereous. *Fore wings* abruptly arched near the base, of approximately even width throughout, the apex and termen evenly rounded, the costa roughened from base to apex; tawny reddish, with a faintly indicated oblique greyish-fuscous shade from before the middle of the costa, extending to the lower edge of the cell; a similar curved shade before the apex; waved lines of sublustrous scales are visible on the outer half of the wing in certain lights; a small black dot at the end of the cell; cilia shining reddish grey. *Exp. al.* ♂ 10, ♀ 11 mm. *Hind wings* trapezoidal; greyish fuscous; cilia very long and slightly paler. *Abdomen* greyish fuscous. *Legs* whitish ochreous.

*Type*, ♂ Mus. Wlsm.; ♀ Mus. Hedemann.

*Hab.* West Indies—ST. THOMAS, 8-22 III. (Gudmann, Hedemann). Three specimens.

"The larva feeds on *Acacia arabica*, joining two leaves together, between which it lives as in a sort of case" (Hedemann).

In the male the colour of the fore wings is dull fawn ochreous, the tawny gloss almost entirely confined to the two darker markings, which are much more conspicuous than in the female. The antennæ are slightly serrate and pubescent beneath.

72. *APINOGLOSSA*, Mschl. & Saalm.

187. *APINOGLOSSA COMBURANA*, Mschl.

*Apinoglossa comburana*, Mschl. Ab. Senck. Nat. Ges. XV. 331, 354 (1894)<sup>1</sup>; Wlsm. Pr. Z. Soc. Lond. 1891, 496, 543 (1892)<sup>2</sup>.

*Hab.* West Indies—PORTORICO<sup>1,2</sup>.



## 73. TORTRIX, L.

## 188. TORTRIX ? EFFETANA, Mschl.

*Tortrix effcetana*, Mschl. Ab. Senck. Nat. Ges. XV. 330, 354 (1890)<sup>1</sup>. *Tortrix ? effcetana*, Wlsm. Pr. Z. Soc. Lond. 1891, 497, 543 (1892)<sup>2</sup>.

*Hab.* West Indies—PORTORICO<sup>1,2</sup>.

## 189. TORTRIX ? INSIGNITANA, Mschl.

*Tortrix insignitana*, Mschl. Ab. Senck. Nat. Ges. XV. 330-1, 354 (1890)<sup>1</sup>. *Tortrix ? insignitana*, Wlsm. Pr. Z. Soc. Lond. 1891, 497, 543 (1892)<sup>2</sup>.

*Hab.* West Indies—PORTORICO<sup>1,2</sup>.

## 74. ARCHIPS, Hb.

Type, *Tortrix piceana*, L. (Hb.).

ARCHIPS, Hb. Tent. (1806).

= *CACÆCIA*, Hb. Verz. bek. Schm. 388 (1826); Hein., Stgr. & Wk., Fern., Meyr., &c.

## 190. ARCHIPS JAMAICANA, Wkr.

*Teras jamaicana*, Wkr. Cat. Lp. Ins. B.M. XXVIII. 291 (1863)<sup>1</sup>. *Cacæcia jamaicana*, Wlsm. Pr. Z. Soc. Lond. 1891, 497, 543 (1892)<sup>2</sup>.

*Hab.* West Indies—JAMAICA<sup>1,2</sup>.

## 75. PTYCHAMORBIA, Wlsm.

## 191. PTYCHAMORBIA CATENANA, Wlsm.

*Ptychamorbia catenana*, Wlsm. Pr. Z. Soc. Lond. 1891, 498-9, 543 (1892)<sup>1</sup>.

*Hab.* West Indies—ST. VINCENT<sup>1</sup>; GRENADA (La Force Estate, 350 ft., windward side, 5 V.—H. H. Smith). BRAZIL—Espiritu Santo<sup>1</sup>, Santa Catherina (*Mus. Wlsm.*).

The specimen from Grenada is a male, and confirms my conjecture that it would only possess eleven veins in the fore wings. It differs, however, from *exustana* in not having a mat of scales on the basal portion of the antennæ. I have also received both sexes from Santa Catherina.

## 76. CERATORRHINETA, Z.

(† *CERORRHINETA*, Z.; ‡ *CERATORRHINETA*, Wlsm.)

## 192. CERATORRHINETA CALIDANA, Z.

*Cerorrrhineta calidana*, Z. Hor. Soc. Ent. Ross. XIII. 116-7 (1877)<sup>1</sup>. *Ceratorrrhineta calidana*, Wlsm. Pr. Z. Soc. Lond. 1891, 500, 543, Pl. XLI. 2 a-e (1892)<sup>2</sup>.

*Hab.* West Indies—CUBA<sup>1,2</sup>.

## 77. PLATYNOTA, Clem.

## 193. PLATYNOTA FLAVEDANA, Clem.

=*CONCURSANA*, Wkr.<sup>6</sup>; =*LATERANA*, Rbs.<sup>5</sup>

*Platynota flavedana*, Clem. Pr. Ac. Nat. Sc. Phil. XII. 348 (1860)<sup>1</sup>. *Tortrix concursana*, Wkr. Cat. Lp. Ins. B.M. XXVIII. 324-5 (1863)<sup>2</sup>. *Tortrix flavedana*, Rbs. Tr. Am. Ent. Soc. II. 278, Pl. VI. 55, ♂ (1869)<sup>3</sup>. *Tortrix laterana*, Rbs. Tr. Am. Ent. Soc. II. 278, Pl. VI. 56, ♀ (1869)<sup>4</sup>. *Tortrix (Platynota) flavedana*, Z. Verh. z.-b. Ges. Wien, XXV. 236-7 (1875)<sup>5</sup>. *Platynota flavedana*, Wlsm. Ill. Typ. Lep. Het. B.M. IV. 11 (1879)<sup>6</sup>; Fern. Tr. Am. Ent. Soc. X. 22. No. 113 (1882)<sup>7</sup>; Pack. U.S. Dept. Agr., Rp. V. 425, 651 (1890)<sup>8</sup>.

*Hab.* UNITED STATES<sup>1-8</sup>, 15-18 VII.<sup>5</sup> [Larva, Clover<sup>7</sup>, *Rosa*<sup>7</sup>, *Sassafras officinale*<sup>7,8</sup>, *Acer*<sup>7,8</sup>]. **West Indies**—HAYTI (Port-au-Prince, 25 V.—*Gudmann*); ST. THOMAS, 10 IV. (*Gudmann*).

This species has a long costal fold.

## 194. PLATYNOTA REPANDANA, Wkr.

*Teras repandana*, Wkr. Cat. Lp. Ins. B.M. XXVIII. 292 (1863)<sup>1</sup>. *Platynota repandana*, Wlsm. Pr. Z. Soc. Lond. 1891, 499, 543 (1892)<sup>2</sup>.

*Hab.* **West Indies**—SAN DOMINGO<sup>1,2</sup>.

This species has a long, straight, costal fold.

## 195. PLATYNOTA ROSTRANA, Wkr.

=*RESTITUTANA*, Wkr.<sup>4</sup>; =*CONNEXANA*, Wkr.<sup>4</sup>

*Teras rostrana*, Wkr. Cat. Lp. Ins. B.M. XXVIII. 290 (1863)<sup>1</sup>. *Teras restitutana*, Wkr. Cat. Lp. Ins. B.M. XXVIII. 292 (1863)<sup>2</sup>. *Teras connexana*, Wkr. Cat. Lp. Ins. B.M. XXVIII. 293 (1863)<sup>3</sup>. *Platynota rostrana*, Wlsm. Ill. Typ. Lp. Het. B.M. IV. 5-6, Pl. LXII. 1 (1879)<sup>4</sup>. *Tortrix rostrana*, Cmstk. U.S. Dept. Agr., Rp. Ent. 1880, 253 (1881)<sup>5</sup>. *Platynota rostrana*, Fern. Tr. Am. Ent. Soc. X. 22. No. 114 (1882)<sup>6</sup>; Wlsm. Pr. Z. Soc. Lond. 1891, 499, 543 (1892)<sup>7</sup>.

*Hab.* UNITED STATES<sup>1,4</sup>—Florida<sup>5,6,7</sup> [Larva, Orange<sup>5,6,7</sup>, 31 I.—II.<sup>5</sup>; 17 V.<sup>5</sup>]. **West Indies**—SAN DOMINGO<sup>1,2,4,6,7</sup>; ST. VINCENT<sup>7</sup>; GRENADA (Balthazar, 250 ft., and La Force Estate, 350 ft., windward side, 15 III.—5 V.—*H. H. Smith*). VENEZUELA<sup>3,6,7</sup>; BRAZIL (Ega)<sup>1,4,7</sup>.

Walker's three species are represented by females indistinguishable from each other, and until male topotypes have been obtained it will be impossible to determine whether they represent one or more species—probably each matches a male of the *flavedana* group occurring with it. I referred the St. Vincent specimens (both females) to *rostrana* with some diffidence, and the reception of both sexes from Grenada *only* does not enable me to clear up the synonymy as confidently as I should desire. The males from

Grenada have a short fold and much resemble *labiosana*, Z., but are smaller.

196. *PLATYNOTA BREVIPLICANA*, sp. n.

*Antennae* dark brown. *Palpi* brownish ochreous. *Head* and *thorax* brownish ochreous. *Fore wings* with a short brownish-ochreous basal patch, somewhat indented on the fold; the costal fold in the male not extending beyond this pale patch, which reaches only to one-fourth the wing-length (in the more northern species *flavedana*, Clem., it extends to half the wing-length); the whole of the middle portion of the wing is overclouded by a broad dark umber-brown band, beyond which the terminal portion is shining whitish ochreous with two sinuate lines of slightly raised scales; there are also some raised scales on the dark central band, notably in an oblique line from its upper and inner angle ending in a strong patch near the outer end of the fold and in a small patch at the outer end of the cell; cilia pale cinnamon-brown on their basal, brownish ochreous on their outer half. *Exp. al.* 15 mm. *Hind wings* cinnamon-brown, blending to ochreous towards the base; cilia shining pale cinnamon-brown. *Abdomen* cinnamon-brown. *Legs* brownish ochreous.

*Type*, ♂ Mus. Wlsm.

*Hab. West Indies*—GRENADA (Balthazar, 250 ft., windward side, 15–20 IV.—*H. H. Smith*). Two specimens.

197. *PLATYNOTA DIMINUTANA*, sp. n.

*Antennae* dark greyish brown. *Palpi* somewhat curved downwards; apical joint less than half the length of the second; grey-brown. *Head* and *thorax* rust-brown. *Fore wings*: male with a short costal fold extending to one-fourth; rust-brown, with a broad central band, thickly mottled with purplish fuscous in which is an oblique line of raised scales ending on the fold, and a second line, shorter and more oblique, from beyond the middle of the costa where it is accompanied by a dark patch; a small patch of dark fuscous scales lies near the base of the dorsum; cilia ferruginous brown on their basal half, pale ochreous on their outer half. *Exp. al.* 14 mm. *Hind wings* cinnamon-brown, tending to ochreous towards the base; cilia shining pale cinnamon-brown. *Abdomen* brownish ochreous. *Legs* pale ochreous.

*Type*, ♂ Mus. Wlsm.

*Hab. West Indies*—GRENADA (Balthazar, 250 ft., windward side, 15 IV.—*H. H. Smith*). Two specimens.

This species differs from *breviplicana* in the more broken or mottled appearance of the central band, which almost assumes the form of an oblique fascia followed by a costal patch, and in the darker ferruginous terminal portion of the wing. It is quite conceivable that it may be a variety of *breviplicana*, but I am strongly inclined to regard it as distinct in the absence of intermediate forms. Except in the colour of the hind wings it approaches somewhat closely the Mexican species *stultana*, Wlsm.

## 78. CÆLOSTATHMA, Clem.

Type, *Cælostathma discopunctata*, Clem. (Clem.).

CÆLOSTATHMA, Clem. Pr. Ac. Nat. Sc. Phil. XII. 355 (1860).

=\**AMPHISA*, Fern. Tr. Am. Ent. Soc. X. 22 (1882), nec Crt.

I cannot agree with Professor Fernald in sinking *Cælostathma* as a synonym of *Amphisa*, Crt., which has veins 7 and 8 of the fore wings stalked and 9 separate, whereas *Cælostathma* has 7 and 8 stalked out of 9.

## 198. CÆLOSTATHMA PARALLELANA, sp. n.

*Antennæ* biciliate,  $2\frac{1}{2}$ ; cream-colour. *Palpi* projecting rather more than the length of the head beyond it; cream-coloured; second joint shaded with fawn-brown externally. *Head* and *thorax* cream-colour. *Fore wings* and cilia cream-coloured, with a dark fawn-brown band from before the middle of the costa to the middle of the dorsum, variable in breadth and distinctness, sometimes diffused or dilated outwards below the middle; this is followed by a second narrower band, commencing on the costa at one-fourth from the apex and reaching to the tornus; a single black dot lies at the end of the cell between veins 5 and 6. *Eap. al.* 12 mm. *Hind wings* pale fawn-grey with a slight reddish tinge. *Abdomen* cream-coloured, shaded with grey across the middle. *Legs* creamy whitish.

*Type*, ♂ Mus. Hdm.; ♀ Mus. Wlsm.

*Hab.* West Indies—ST. THOMAS, 4 IV.–14 IV. (*Gudmann, Hedemann*). "The larva feeds on *Mimosa*" (*Hedemann*).

This species differs from *Cælostathma discopunctana*, Clem., in the form of the outer band, which is almost parallel with the first instead of being conspicuously curved inward at its upper extremity. Along the costa the intensity of the bands is variable, and in one female they are almost entirely obliterated, the wing-colour becoming pale fawn-ochreous instead of creamy. I cannot, however, doubt that it belongs to the same species.

## III. PHALONIANÆ.

## 79. PHALONIA, Hb.

=†*COCHYLIS*, Tr., Stgr. Cat.; ‡*CONCHYLIS*, Sdf., Fern., &c.

## 199. PHALONIA ICHTHYOCROA, sp. n.

*Antennæ* whitish cinereous. *Palpi* projecting nearly the length of the head beyond it; whitish, shaded with brown externally. *Head* hoary. *Thorax* shining silvery whitish. *Fore wings* shining silvery whitish; a rust-brown shade along the base of the costa not extending to the dorsum; a broken fascia commencing on the costa beyond the middle consists of a dark-margined rust-brown spot at its upper extremity and a larger rust-brown shade on its lower half, extending somewhat inwards and containing one or two patches of blackish scales; the apical



portion of the wing is mottled with rust-brown mixed with blackish scales, forming a subapical transverse streak and a spot opposite to the middle of the termen; minute blackish speckling is visible in the whitish cilia and along the dorsum as well as in a series of costal reticulations. *Exp. al.* 8–10 mm. *Hind wings* pale brownish grey, with a slight pinkish reflection; cilia paler. *Abdomen* pale brownish grey. *Hind legs* pale cinereous.

*Type*, ♂ Mus. Wlsm.; ♀ Mus. Hedemann.

*Hab.* West Indies—ST. CROIX, 26 IV. (*Gudmann*); ST. THOMAS, 15 III. (*Hedemann*); GRENADA (Balthazar, 250 ft., windward side, 5–10 IV.—*H. H. Smith*). Four specimens.

#### 200. PHALONIA SUBOLIVACEA, sp. n.

*Antennae* whitish. *Palpi* whitish, shaded with olivaceous on their outer sides. *Head* whitish. *Thorax* creamy whitish. *Fore wings* shining creamy white, shaded with olivaceous along the basal half of the costa; an olivaceous band, descending straight from the middle of the costa, is angulated on the cell, reverting to the dorsum before the middle, at its angle is a small dot of black scales; a small, oblique, olivaceous streak commences on the costa halfway between this and the apex, not quite attaining the middle of the termen, along which is a slight olivaceous shade, with a rounded patch of the same colour lying above the tornus and a small brownish dot below and before it at the commencement of the dorsal cilia; cilia shining creamy whitish. *Exp. al.* 10 mm. *Hind wings* pale smoky grey; cilia whitish, shaded along their middle. *Abdomen* greyish; anal tuft inclining to ochreous.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—ST. CROIX, 26 IV.–7 V. (*Gudmann*); ST. THOMAS, 7 III.–4 IV. (*Gudmann*, *Hedemann*). Nine specimens.

#### 201. PHALONIA DISTIGMATANA, sp. n.

= *Conchylis* sp. (near *angulatana*, Rbs.), Wlsm. Pr. Z. Soc. Lond. 1891, 501, 543 (1892)<sup>1</sup>.

*Antennae* ochreous. *Palpi* whitish ochreous, slightly shaded externally. *Head* and *thorax* whitish ochreous. *Fore wings* whitish ochreous, with three dark fawn-brown costal spots and the extreme base of the costa also fawn-brown; the first spot occurs at one-fourth from the base and almost meets an oblique streak of a slightly paler shade running outwards from the base of the dorsum; the second is large and triangular, a little beyond the middle, its apex pointing outwards and scarcely separated from the apex of a similar dorsal triangle almost exactly opposite to it, but very slightly nearer to the base; the third costal spot is very minute and less well-defined; from this runs a paler fawn-brown band, outwardly to the termen below the apex and downwards along the terminal margin to the tornus; a small brown spot at the end of the cell, almost between the apices of the costal and dorsal triangles, completes the wing-markings, with the exception

of some scarcely noticeable silvery lines in the apical half of the wing along the edges of the darker markings; cilia pale ochreous. *Exp. al.* 9 mm. *Hind wings* and cilia greyish. *Abdomen* greyish. *Legs* whitish ochreous.

*Type*, ♂ Mus. Wlsm.

*Hab. West Indies*—ST. CROIX, 25 VI. (*Hedemanu*); ST. VIXCENT (*H. H. Smith*)<sup>1</sup>; GRENADA (Balthazar, 250 ft., windward side, 13 IV.—4 V. (*H. H. Smith*). Five specimens.

I am unacquainted with the following three species, and therefore am unable to refer them to this genus with certainty.

#### 202. PHALONIA ? PROLECTANA, Mschl.

*Cochylis prolectana*, Mschl. Ab. Senck. Nat. Ges. XV. 332, 354 (1890)<sup>1</sup>. *Conchylis prolectana*, Wlsm. Pr. Z. Soc. Lond. 1891, 500, 543 (1892)<sup>2</sup>.

*Hab. West Indies*—PORTORICO<sup>1,2</sup>.

#### 203. PHALONIA ? TECTONICA, Mschl.

*Cochylis tectonica*, Mschl. Ab. Senck. Nat. Ges. XV. 332-3, 354 (1890)<sup>1</sup>. *Conchylis tectonica*, Wlsm. Pr. Z. Soc. Lond. 1891, 501, 543 (1892)<sup>2</sup>.

*Hab. West Indies*—PORTORICO<sup>1,2</sup>.

#### 204. PHALONIA ? VICINITANA, Mschl.

*Cochylis vicinitana*, Mschl. Ab. Senck. Nat. Ges. XV. 333, 354 (1890)<sup>1</sup>. *Conchylis vicinitana*, Wlsm. Pr. Z. Soc. Lond. 1891, 501, 543 (1892)<sup>2</sup>.

*Hab. West Indies*—PORTORICO<sup>1,2</sup>.

#### 80. THYRAYLIA, g. n.

(*θύραυλία* = living out of doors.)

Type, *Conchylis bunteana*. Rbs.

*Antennæ* ♂ shortly biciliate.

*Palpi* moderate, porrect; second joint roughly clothed; apical joint short, blunt.

*Head* roughly clothed.

*Thorax* smooth.

*Fore wings*: ♂ without a costal fold; costa somewhat straight, rounded to the slightly depressed apex; termen rather oblique, not sinuate beneath apex; tornus rounded. *Neuration*: 12 veins all separate; 2 from outer fourth of cell, 7 to costa above apex.

*Hind wings* slightly broader than the fore wings, trapezoidal; apex and tornus rounded; termen and dorsum subsinuate. *Neuration*: 8 veins; 3 and 4 connate (or stalked), 5 almost straight but inclining to 4 towards base, 6 and 7 stalked.

*Hind legs* smooth.

Allied to *Phthochroa*, Stph. (*Commophila*, Meyr.), from which it

differs in the much shorter palpi, in vein 7 of the fore wings attaining the costa before the apex, and in the absence of raised scales. It is possible that specimens in better condition might exhibit a slight thoracic tuft.

205. *THYRAYLIA BUNTEANA*, Rbs.

*Conchylis bunteana*, Rbs. Tr. Am. Ent. Soc. II. 238, Pl. VIII. 86 (1869)<sup>1</sup>; Z. Verh. z.-b. Ges. Wien, XXV. 245-6 (1875)<sup>2</sup>; Fern. Tr. Am. Ent. Soc. X. 26. No. 144 (1882)<sup>3</sup>; Wlsm. Pr. Z. Soc. Lond. 1891, 501, 543 (1892)<sup>4</sup>.

*Hab.* UNITED STATES<sup>1-4</sup>. **West Indies**—ST. VINCENT<sup>4</sup>.

206. *THYRAYLIA LEPIDANA*, Clem.

*Argyrolepis? lepidana*, Clem. Pr. Ac. Nat. Sc. Phil. XII. 355 (1860)<sup>1</sup>. *Conchylis lepidana*, Rbs. Tr. Am. Ent. Soc. II. 287, Pl. VIII. 84 (1869)<sup>2</sup>; Fern. Tr. Am. Ent. Soc. X. 25. No. 142 (1882)<sup>3</sup>.

*Hab.* UNITED STATES<sup>1-3</sup>. **West Indies**—JAMAICA (Kingston, 17 VII.—*Cockerell*); ST. CROIX, 6-18 V. (*Gudmann, Hedemann, Pontoppidan*).

207. *THYRAYLIA LACTEIPALPIS*, Wlsm.

*Conchylis lacteipalpis*, Wlsm. Pr. Z. Soc. Lond. 1891, 500, 543 (1892)<sup>1</sup>.

*Hab.* **West Indies**—ST. VINCENT<sup>1</sup>.

IX. TINEIDÆ.

I. *OPOSTEGINÆ*.

81. *OPOSTEGA*, Z.

208. *OPOSTEGA ABRUPTA*, sp. n.

(Head missing.) *Thorax* shining white. *Fore wings* shining white, with pale bluish reflections; before the apex a pale fawn-brown costal streaklet, tending obliquely outwards, is dark-margined on both sides, this runs nearly parallel with the upper half of a slender dark line in the apical cilia which is continued around the termen, with a slight inclusion opposite the apex of the wing, below which is a small reduplicated black dot; the cilia beyond the dark line which runs through them are fawn-brown, their basal half white along the termen and gradually shading to fawn-brown on the dorsum. On the underside the brown outer ends of the apical cilia are plainly visible. *Exp. al.* 5.5 mm. *Hind wings* and cilia shining pale fawn-brown. *Abdomen* shining fawn-brown. *Hind legs* pale fawn-brownish, the bristles strongly developed.

*Type*, ♂ Mus. Hedemann.

*Hab.* **West Indies**—ST. THOMAS, 19 III. (*Hedemann*). Unique.

Although the head is missing, it is easy to decide that this is an undescribed species of the genus to which I refer it.

## 209. OPOSTEGA ADUSTA, sp. n.

*Antennæ* with a broad shining white eyecap on the basal joint; beyond pale fawn-brownish. *Palpi* pale fawn-brownish. *Head* and *thorax* shining white. *Fore wings* shining white, with blue and lilac reflections: a conspicuous umber-brown dorsal spot at about one-third from the base; a narrow dark umber-brown shade along the costa a little beyond the middle is continued to the commencement of the costal cilia; a slender fuscous line beginning in these runs obliquely outwards through the cilia forming an angle at the apex of the wing, thence deflected along the termen; this is reduplicated by a slight shade in the middle of the fawn-brown cilia beyond it, its upper half preceded by a slight ferruginous tinge running parallel with it from costa to apex; cilia shining pale fawn-brownish along the dorsum and tornus. Under-side spotless. *Exp. al.* 5 mm. *Hind wings* and cilia pale fawn-brownish. *Abdomen* (somewhat denuded) shining pale brownish. *Hind legs* shining pale brownish ochreous, the bristles continued to the tarsal joint.

*Type*, ♂ Mus. Hedemann.

*Hab.* West Indies—ST. THOMAS, 20 III. (*Hedemann*). Unique.

## 210. OPOSTEGA VENTICOLA, sp. n.

*Antennæ* golden yellow; eyecaps shining white. *Palpi* white. *Head* and *thorax* shining white. *Fore wings* shining white, with two minute oblique fuscous costal streaklets followed by a short straight one before the apex, all tending to converge in the direction of a single black point in the apical cilia; the space between the first and second streak is golden yellow, which extends also to the black point but not to the dorsum or tornus; a very narrow faint golden spot rests on the middle of the dorsum; beyond the black point a slight shade is visible in the cilia, which are otherwise white with a golden tinge. *Exp. al.* 6 mm. *Hind wings* whitish grey; cilia golden white. *Abdomen* white with a golden tinge. *Legs*: hind tibiae and basal joints of the tarsi with stiff hairs; whitish ochreous.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—HAYTI (Port-au-Prince, 23 V., *Gudmann*); GRENADA (Balthazar, 250–300 ft., windward side, 5 IV.–8 V.—*H. H. Smith*). Four specimens.

## 211. OPOSTEGA SALTATRIX, sp. n.

*Antennæ* with a conspicuous shining white eyecap; remaining joints pale straw. *Palpi* small, slender, dependent; yellowish. *Head* and *thorax* shining white. *Fore wings* shining white, with a dark olive-grey fascia before the middle, diffused outwards at its upper end to the middle of the costa; this is followed by a streak of the same colour, along the apical portion of the costa, reaching to the apex; a slender streak above it running through the cilia and meeting it beyond the apex, this streak is sometimes very inconspicuous; cilia pale olive-grey. *Exp. al.* 5 mm. *Hind wings* very



narrow; pale olive-grey; cilia the same. *Abdomen* greyish. *Legs*: hind tibiae with profuse spiny hairs above; pale greyish.

*Type*, ♂ Mus. Wlsm.

*Hab. West Indies*—ST. THOMAS, 18 III.–2 IV. (*Gudmann, Hedemann*). Three specimens.

“In repose the moth resembles a Cicada and springs forwards” (*Hedemann*).

## II. DENDRONEURINÆ.

### 82. DENDRONEURA, Wlsm.

#### 212. DENDRONEURA PRÆSTANS, Wlsm.

*Dendroneura præstans*, Wlsm. Pr. Z. Soc. Lond. 1891, 510, 544, Pl. XLI. 6, a-c (1892)<sup>1</sup>.

*Hab. West Indies*—ST. VINCENT<sup>1</sup>; GRENADA (windward side, Chantilly Estate, 350 ft., Balthazar, 250 ft., 13–20 IV.—*H. H. Smith*).

#### 213. DENDRONEURA SIMPLEX, sp. n.

*Antennæ* rather shorter than the fore wings; pale yellowish fawn. *Palpi* short, flattened; apical joint subovate, broader than the second; pale yellowish fawn. *Head* and *thorax* pale fawn. *Fore wings* shining, pale yellowish fawn, with a bright yellowish ferruginous spot before the apex, preceded by two oblique fuscous streaks, one from a little beyond the middle of the dorsum, the other commencing a little beyond it on the costa, the two nearly meeting outwardly at their extremities (these appear to be composed of very fugitive scales and are easily obliterated); beyond the ferruginous spot a dark fuscous (almost black) slender curved line passes from the apex through the silvery-yellowish cilia giving a slight uncate appearance, tornal cilia yellowish grey. *Exp. al.* 8 mm. *Hind wings* and cilia yellowish grey. *Abdomen* pale greyish. *Legs* shining straw-whitish.

*Type*, ♂ Mus. Wlsm.

*Hab. West Indies*—SAN DOMINGO (Puerto Plata, 16 V., *Gudmann*). Two specimens.

This differs from *præstans*, Wlsm., the only other known species of the genus, in the apparent absence of the tuft of long hair-scales arising beneath the eyes, which, so far as I am able to determine, does not exist in this species; but such structures are often only displayed in individual specimens, and in others are completely hidden away.

## III. LYONETIANÆ.

### 83. LEUCOPTERA, Hb.

LEUCOPTERA, Hb. Verz. bek. Schm. 426 (1826).

= *CEMIOSTOMA*, Z. Lin. Ent. III. 272–3 (1848).

#### 214. LEUCOPTERA COFFEELLA, Guér.-Mén. & Prrott.

= *NOCTUELLA*, Mdnr.<sup>8</sup>

*Elachista coffeella*, Guér.-Mén. & Prrott. Mém. Ins. Cafiers Antill. 1–32, Pl. I.–II. (1842)<sup>1</sup>; Rev. Zool. 1842, 126–7<sup>2</sup>; Ann.

Soc. Ent. Fr. XI. Bull. ii. (1842)<sup>3</sup>. *Bucculatrix* sp., Stn. Ent. Wk. Int. IV. 70 (1858)<sup>4</sup>. *Cemiosoma coffeella*, Stn. Ent. Wk. Int. X. 110-11 (1861)<sup>5</sup>. *Elachista coffeella*, Nietn. Obs. Enemies Coffee-tree Ceylon, 24 (1861)<sup>6</sup>: (2 edn.) 18 (1872)<sup>6</sup>. . . . . *noctuella*, Madinier, Rev. Agr. Imp. Fluminense Agr. No. 3, p. 29 *et seq.* (18..) <sup>7</sup>. *Cemiosoma coffeellum*, P. Mann, Am. Nat. VI. 332-41, 596-607, Pl. V. (1872)<sup>8</sup>. *Elachista coffeella*, Nietn. (Green's edn.) Obs. Enemies Coffee-tree Ceylon, 16 (1880)<sup>9</sup>.

*Larva* SUP. *Coffea arabica* <sup>1,9</sup>. *Pupa* in hammock (teste fig.) <sup>1</sup>.

*Hab.* **West Indies**—GUADELOUPE, larva and imago, I.-XII. <sup>1,5,8</sup>; MARTINIQUE <sup>7,9</sup>. BRAZIL—Vassouras (Prov. Rio Janeiro, introduced from Antilles), larva and imago, III.-VI. <sup>9</sup>

No. 7 is quoted from Mann (No. 8), as I have not been able to find a copy of the work in London, where indeed the title appears to be unknown, and I should be grateful to anyone who could tell me where it was published. The second edition of Nietner cited above appears to have been overlooked; there is a copy in the British Museum.

#### 84. COMPSOSCHEMA, g. n.

(κομψός=elegant; σχῆμα=form.)

Type, *Compsoschemu bimarginellum*, Wlsm.

*Antennæ* slightly longer than the fore wings, somewhat stout, simple; basal joint with a rather large eyecap. *Labial palpi* slender, dependent; apical joint as long as second. *Maxillary palpi* obsolete. *Haustellum* almost obsolete. *Head* and face smooth. *Thorax* smooth. *Fore wings* somewhat dilated from the base outwards, apex depressed, rounded, termen slightly sinuate beneath the apex. *Neuration*: 9 veins; 7 and 8 stalked, 7 to costa slightly above apex; 3, 4, and 6 absent. *Hind wings* ( $\frac{1}{2}$ ) elongate-acuminate, evenly attenuated from base; cilia 4. *Neuration*: 5 veins, without a cell (radial and cubital veins coincident); 3 absent, 4 absent, 6 and 7 coincident. *Legs*: hind tibiae with somewhat long hairs.

Allied to *Lyonetia*, Hb.

#### 215. COMPSOSCHEMA BIMARGINELLUM, sp. n.

*Antennæ* yellowish white, eyecaps snow-white. *Palpi* white. *Head* and *thorax* snow-white. *Fore wings* shining white, a slender outwardly oblique dorsal streaklet from one-half reaches nearly across the wing; this is dark brown, with a golden sheen along its inner margin; some very faint golden-yellow mottling is visible on the apical half of the wing, and there is a minute black spot at the extreme apex; the long whitish cilia, which give the end of the wing a much widened appearance, are marked by two dark brown lines running through them, the first at the base, the other beyond their middle—these both pass around the apex to the costal cilia and reach well through the tornal cilia. *Exp. al.* 6 mm. *Hind wings* and cilia pale greyish. *Abdomen* brownish above.

*Legs*: hind tibiæ clothed with somewhat long whitish hairs; tarsi white, basal joint distinctly marked with fuscous.

*Type*, ♂ Mus. Gudmann.

*Hab. West Indies*—ST. THOMAS, 12-16 III. (*Gudmann, Hedemann*). Three specimens.

#### 85. COPTODISCA, Wlsm.

§ *ASPIDISCA*, Clem. Pr. Ac. Nat. Sc. Phil. XII. 11-12, 209 (1860); Stn. Tin. N. Am. 104-5 (fig.), 143 (1872).

COPTODISCA, Wlsm. Ent. Mo. Mag. XXXI. 41 (1895).

#### 216. COPTODISCA RHIZOPHORÆ, sp. n.

*Antennæ* and *palpi* silvery. *Head*: face silvery, the head above with a golden sheen. *Fore wings* golden yellow, with a pair of silvery-whitish costal and dorsal streaks beyond the middle (the dorsal somewhat preceding the costal), both dark-margined before and behind; a very oblique silvery costal streak, also dark-margined, occurs at one-third from the base, and before the apex is a small silvery costal spot, also dark-margined, its outer marginal streak extending downward through the terminal cilia beyond a rounded velvety-black subterminal dot; cilia silvery whitish, with a curved line along their base from the tornus to the subterminal dot; the dorsum slightly silvery. *Exp. al.* 3.5-4 mm. *Hind wings* and cilia pale greyish. *Abdomen* greyish. *Legs* silvery.

*Co-types*, (1-2) Mus. Wlsm.

*Hab. West Indies*—ST. THOMAS, 15 III.-30 IV. (*Gudmann, Hedemann*). Four specimens.

"The young larva mines in leaves of *Rhizophora mangle*; later on it cuts a case out of the leaves" (*Hedemann*). Bred by Baron von Hedemann and Mr. Gudmann. Mr. Gudmann found a leaf containing twenty-four mines.

Nearly allied to *splendoriferella*, Clem.

#### 86. CYCLOPLASIS, Clem.

[Clem. Pr. Ent. Soc. Phil. II. 423-4 (1864); Stn. Tin. N. Am. 246-8 (1872).]

#### 217. CYCLOPLASIS BASIPLAGATA, sp. n.

*Antennæ* shining greyish. *Palpi* and *head* silvery. *Thorax* pale fawn; shining pale creamy-metallic beneath. *Fore wings* and costal cilia shining pale fawn, a short basal patch darker fawn-grey; dorsal cilia greyish. *Exp. al.* 4 mm. *Hind wings* and cilia tawny greyish. *Abdomen* tawny grey: underside shining pale creamy metallic. *Legs* pale fawn; the spines on the tibiæ and tarsi very distinct.

*Type*, ♂ Mus. Wlsm.

*Hab. West Indies*—ST. THOMAS, 10 III.-10 IV. (*Gudmann, Hedemann*). Two specimens.

Larva in a case similar to that of a *Coleophora* (*Hedemann*); on

*Sida* sp. (*Gudmann*). The moth holds the second pair of legs outstretched as in *Stathmopoda* (*Hedemann*).

It is interesting to find a second species of this genus, originally described by Clemens from Pennsylvania. I have not had sufficient material to enable me to critically examine the structure of this genus, which is perhaps allied to *Heliozela*, HS.

#### IV. BEDELLIANÆ.

##### 87. BUCCULATRIX, Z.

##### 218. BUCCULATRIX FLEXUOSA, sp. n.

*Antennæ* with a strong shining white eyecap on the basal joint; pale fawn, with minute darker annulations towards the apex. (*Palpi* obsolete.) *Head* whitish, with a line of fawn-coloured hairs down the middle; face shining white. *Thorax* fawn, the tegulæ with white longitudinal streaks. *Fore wings* fawn, with white lines—one from the base scarcely below the costa reaches to the end of the cell; another following the extreme costa from the base is deflected to the end of the cell from about the middle of the wing-length, nearly reaching to a short longitudinal black streak beyond the outer end of the cell; another white line from the base of the dorsum reaches along the fold to one-third, nearly joining a sinuous white line which, arising from before the middle of the dorsum, is waved upwards and outwards, reverting to the tornus and thence overspreading the termen and cilia to below the apex; there are two slender fawn-coloured dark lines running through the white cilia at and above the apex. *Exp. al.* 5 mm. *Hind wings* pale greyish, cilia brownish grey. *Abdomen* greyish ochreous. *Legs* fawn-white, the tarsi minutely speckled with fuscous.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—ST. THOMAS, 8 III.—2 IV. (*Gudmann*, *Hedemann*). Six specimens.

Bred by chance in a glass containing some twigs of *Acacia arabica*, but the larva was not observed (*Gudmann*).

##### 219. BUCCULATRIX UNIPUNCTA, sp. n.

*Antennæ* whitish. (*Palpi* obsolete.) *Head* and *thorax* creamy white. *Fore wings* creamy whitish, suffused and shaded with pale fawn-ochreous, especially along the base of the fold and along the outer two-thirds of the costa; with a single strong black dot before the termination of the fold; a short slender line runs through the apical cilia, and there are a few black scales at the extreme apex and at the base of the whitish cilia. *Exp. al.* 6 mm. *Hind wings* and cilia very pale yellowish grey. *Abdomen* shining, pale whitish ochreous. *Legs* whitish, tarsal joints minutely spotted with fuscous.

*Type*, ♂ Mus. Hedemann.

*Hab.* West Indies—ST. THOMAS, 12 III.—3 IV. (*Hedemann*). Two specimens.



## 88. TISCHERIA, Z.

## 220. TISCHERIA HELIOPSIELLA, Chamb.

†*HELIOPSIELLA*, Chamb. (‡*HELIOPSIELLA*, Wlsm.<sup>8</sup>) = *NOLCKENII*, F. & B.<sup>8</sup>

*Tischeria heliopsisella*, Chamb. Cin. Qr. Jr. Sc. II. 113-4 (1875)<sup>1</sup>. *Tischeria nolckenii*, F. & B. Stett. Ent. Ztg. XXXVII. 220 (1876)<sup>2</sup>. *Tischeria heliopsisella*, Chamb. Bull. U.S. G.G. Surv. IV. 115<sup>3</sup>, 116<sup>4</sup>, 165<sup>5</sup> (1878). *Tischeria nolckenii*, F. & B. Stett. Ent. Ztg. XXXIX. 257 (1878)<sup>6</sup>. *Tischeria heliopsisella*, Hgn. (& Frey) Pap. IV. 153 (1884)<sup>7</sup>. *Tischeria heliopsiella*, Wlsm. Ins. Life, II. 325 (1890)<sup>8</sup>; III. 389 (1891)<sup>9</sup>; Riley, Smith's List Lep. Bor. Am. 110. No. 5917 (1891)<sup>10</sup>.

*Hab.* UNITED STATES<sup>1-10</sup>—Kentucky<sup>1, 7, 8</sup>; Texas<sup>2, 6, 8</sup>; California<sup>8</sup>. Larva, *Ambrosia trifida* and spp.<sup>1-3, 6, 8</sup>; *Heliopsis laevis* and spp.<sup>1, 4, 8</sup>, VII.<sup>6</sup>, VIII.<sup>6, 8</sup>, IX.<sup>6</sup>; imago, VIII.<sup>8</sup>, summer and fall<sup>1</sup>. **West Indies**—ST. THOMAS, 2 IV. (*Gudmann*).

Bred by Mr. Gudmann, but the plant not identified.

## 221. TISCHERIA UNICOLOR, sp. n.

*Antennæ* greyish fuscous. *Palpi* ochreous. *Head* pale ochreous. *Thorax* brownish ochreous. *Fore wings* ochreous, with a very slight darkened shade at the extreme base of the costa and a faint reddish gloss (in some lights) towards the apex; cilia concolorous with the wings. *Exp. al.* 6 mm. *Hind wings* pale grey; cilia reddish grey. *Abdomen* whitish ochreous. *Legs* whitish ochreous.

*Type*, ♂ Mus. Gudmann.

*Hab.* **West Indies**—ST. CROIX, 5 V. (*Gudmann*). Unique.

Bred by Mr. Gudmann from larvæ mining leaves of a tree which was not identified.

## 222. TISCHERIA PULVEREA, sp. n.

*Antennæ*, ♂ with very long biciliations; pale fuscous. *Palpi* short, straight, drooping; whitish. *Head* and *thorax* fawn-yellowish. *Fore wings* pale fawn-yellowish, profusely sprinkled around all the margins (but especially along the costa) with smoky-fuscous scales; a slight indication of a dark dorsal mark before the torners; cilia greyish. *Exp. al.* 5 mm. *Hind wings* pale grey; cilia yellowish grey. *Abdomen* greyish. *Legs* unspotted, yellowish white.

*Type*, ♂ Mus. Wlsm.

*Hab.* **West Indies**—ST. THOMAS, 15-30 III. (*Gudmann*, *Hedemann*). Two specimens.

Bred by Mr. Gudmann, but the plant not identified.

## V. GRACILARIANÆ.

## 89. LITHOCOLLETIS, Hb.

## 223. LITHOCOLLETIS ? ALBIMACULA, sp. n.

*Antennæ* cinereous, with a broad white band before the apex. (*Palpi* apparently broken in setting.) *Head* orange-ochreous, the

face silvery. *Thorax* dark bronzy brown. *Fore wings* dark bronzy brown, with two narrow transverse fasciæ, the one before, the other scarcely beyond the middle, and a short dorsal streak from the anal angle shining silvery metallic, a strong snow-white spot running through the costal cilia; cilia bronzy brown. *Exp. al.* 7.5 mm. *Hind wings* and cilia slightly paler bronzy brown. *Abdomen* purplish fuscous. *Legs* brownish: the tarsal joints broadly banded with whitish; two small white spots at the end of the tibiæ.

*Type*, ♂ Mus. Hedemann.

*Hab. West Indies*—ST. THOMAS, 10 IV. (*Hedemann*). Unique.

This species cannot be referred with certainty to *Lithocolletis* as the underside of the head is injured in pinning.

## 224. LITHOCOLLETIS DESMODIELLA, Clem.

= *GREGARIELLA*, Mrt.<sup>10</sup>

*Lithocolletis desmodiella*, Clem. Pr. Ac. Nat. Sc. Phil. XI. 318, 319, 320 (1859)<sup>1</sup>; Stn. Tin. N. Am. pp. xiii, 37, 63, 65, 68 (1872)<sup>2</sup>; Chamb. Can. Ent. III. 127, 162 (1871)<sup>3</sup>; V. 47 (1873)<sup>4</sup>; F. & B. Stett. Ent. Ztg. XXXVII. 227 (1876)<sup>5</sup>; Chamb. Bull. U.S. G.G. Surv. IV. 110<sup>6</sup>, 154 (1878)<sup>7</sup>; Jr. Cin. Soc. N. H. II. 189–90 (1880)<sup>8</sup>. *Lithocolletis gregariella*, Mrt. Can. Ent. XIII. 245–6 (1881)<sup>9</sup>. *Lithocolletis desmodiella*, Wlsm. Tr. Am. Ent. Soc. X. 202 (1882)<sup>10</sup>; Ins. Life, II. 119 (1889)<sup>11</sup>; III. 328. No. 52 (1891)<sup>12</sup>; Riley, Smith's List Lep. Bor. Am. 108. No. 5850 (1891)<sup>13</sup>.

*Hab. UNITED STATES*<sup>1–13</sup>. Larva, INF. *Desmodium viridiflorum*<sup>1, 5, 11</sup>, spp.<sup>3, 6, 8</sup>; *Phaseolus pauciflorus*<sup>9, 11</sup>, sp.<sup>8</sup>, VII. – IX.<sup>1–3, 5</sup>. Imago, spring<sup>9</sup>; midsummer<sup>9</sup>. *West Indies*—ST. THOMAS, 11 III.–10 IV. (*Gudmann*, *Hedemann*); Larva, *Centrosema virginianum* (*Gudmann*).

Bred by Mr. Gudmann and Baron von Hedemann from larvæ feeding on *Centrosema virginianum*.

## 225. LITHOCOLLETIS ARGENTIFRONTILLA, sp. n.

*Antennæ* brownish, faintly annulated. *Palpi* pale saffron. *Head* and face shining silvery white, the head with a saffron spot behind the white tuft. *Thorax* pale saffron. *Fore wings* pale saffron, with four transverse white fasciæ, slenderly dark-margined internally: the first before the middle, slightly curved outwards, the second at the middle, straight, the third at the commencement of the costal cilia tending inwards to the dorsum, the fourth a little before the apex running through the cilia, which are saffron beyond it at the apex but greyish before it on the dorsum. *Exp. al.* 5 mm. *Hind wings* and cilia pale greyish. *Abdomen* greyish. *Legs* white, with pale saffron annulations.

*Type*, ♂ Mus. Hedemann.

*Hab. West Indies*—ST. THOMAS, 11 III.–2 IV. (*Hedemann*). Two specimens.

226. *LITHOCOLLETIS TENUICAUDELLA*, Wlsm.

*Antennæ* saffron. *Palpi* whitish. *Head* pale saffron; face silvery white. *Thorax* pale saffron. *Fore wings* pale saffron, with four costal and dorsal streaks shining white, slightly dark-margined before and behind: the first two costal streaks are conspicuous and oblique (the first a little before the middle, the second a little beyond it), the third and fourth costal are very small immediately before the apex, their points turned slightly inwards; the first dorsal arises on the middle, its apex reaching as far as that of the second costal, but it is much less clearly defined; the second and third dorsal are opposite to the outer costal streaks, but are also indistinct; a round black spot lies at the extreme apex, a slender smoky line running through the cilia in a half circle beyond it, to which is attached a slender smoky line running straight outward to the end of the cilia, which are slightly marked with white above and below it; dorsal cilia greyish. *Exp. al.* 5 mm. *Hind wings* and cilia greyish. *Abdomen* grey. *Legs* whitish, with faint tarsal spots.

*Type*, ♂ Mus. Hedemann.

*Hab.* West Indies—ST. CROIX, 1 V. (*Hedemann*). Unique.

## 90. ORNIX, Tr.

227. *ORNIX ERRANTELLA*, sp. n.

*Antennæ* slightly longer than the fore wings; yellowish grey. *Palpi* drooping, slender; whitish cinereous. *Head* with projecting scales above; pale cinereous. *Thorax* pale stone-grey. *Fore wings* pale stone-grey, with brownish-fuscous longitudinal streaks: the first commencing at the base leaves the costa at one-fourth, extending to the outer end of the cell where it almost joins a sharply-angulated costal streak of the same colour; the second commencing at the base of the dorsum extends to two-thirds the wing-length, its lower edge obtusely biangulated and more sharply defined than its upper edge, which is somewhat diffused; a slender streak from before the tornus points towards the apex, but is terminated by a reduplicated oblique transverse bar extending outward to the termen, above the tornus, from the commencement of the costal cilia; the central space between the dark margins of this band is somewhat silvery, and beyond the band the triangular apical space left by it contains a dark fuscous spot margined before and beneath by silvery scales, with a short streak of the same from the apex; cilia brownish grey, becoming whiter towards the apex. *Exp. al.* 8.5 mm. *Hind wings* and cilia brownish grey. *Abdomen* brownish grey. *Legs* bone-whitish, with faintly mottled tarsal joints.

*Type*, ♂ Mus. Gudmann.

*Hab.* West Indies—ST. THOMAS, 18 III. (*Gudmann*). Unique.

## 91. SPANIOPTILA, g. n.

(σπάριος=slender; πτεῖλον=wing.)

Type, *Spanioptila spinosum*, Wlsm.*Antennæ* longer than the fore wings, simple; basal joint with a pecten.*Labial palpi* long, slender, drooping, curved, divergent, naked; terminal joint shorter than second.*Maxillary palpi* moderate, filiform, drooping.*Haustellum* moderate.*Head* and face smooth.*Thorax* smooth.*Fore wings* narrow, elongate, lanceolate, dorsum ciliate almost to base. *Neuration*: 8 veins; 11 absent, 10 absent, 7 to apex, 3 absent.*Hind wings* linear, acute, cilia 5. *Neuration*: 6 veins; cell open, 3 and 4 coincident, 5 and 6 coincident.*Abdomen* long and slender.*Legs*: front tibiæ slightly thickened with scales at their end; middle and hind tibiæ and tarsi clothed with spiny hairs, tending to arrange themselves in tufts.Allied to *Gracilaria*, but distinguishable by the narrower wings and consequently more degraded neuration, by the pecten on the basal joint of the antennæ, and by the bristly middle and hind legs.

## 228. SPANIOPTILA SPINOSUM, sp. n.

*Antennæ* white, the basal joint with a pecten beneath. *Palpi* white. *Head* snow-white. *Thorax* white, with a yellowish tinge. *Fore wings* white, with a yellowish tinge and some dark brownish transverse speckling which becomes agglomerated in two elongate dorsal marks, one before and one beyond the middle, also in a faint costal spot above each of them; a slender ochreous shade runs from the end of the cell to the apex where a smoky line crosses the cilia, giving a falcate appearance not due to the form of the wing which is acute; the cilia, which extend along the dorsum nearly to the base, are tawny greyish. *Exp. al.* 10 mm. *Hind wings* pale grey, with tawny-grey cilia. *Abdomen* shining whitish. *Legs* white; bristly above on the hind tibiæ and tarsi, the latter flecked with umber-brown at the feet and spurs.

Type, ♂ ♀ Mns. Wlsm.

*Hab.* West Indies—ST. THOMAS, 22 III.–12 IV. (*Gudmann*, *Hedemann*). Five specimens.

## 92. EUCOSMOPHORA, g. n.

(εὖ=beautiful; κόσμος=an ornament; φερεῖν=to carry.)

Type, *Eucosmophora dives*, Wlsm.*Antennæ* more than  $1\frac{1}{4}$ , simple; basal joint without a pecten.*Labial palpi* strongly recurved laterally, smooth; apical joint longer than second.



*Maxillary palpi* well-developed, not folded, slightly recurved, dependent or porrect, smooth.

*Haustellum* moderate.

*Head* and face smooth.

*Thorax* smooth.

*Fore wings* narrow, elongate, lanceolate, dorsum ciliate almost to base. *Neuration*: 8 veins; 7 to costa, 8 absent, 3 and 4 absent, 6 absent.

*Hind wings* narrow, lanceolate, acute, cilia 4. *Neuration*: 6 veins, cell open, 5 and 6 coincident, 3 and 4 coincident.

*Abdomen* long, slender.

*Legs*: hind tibiæ pectinate above with moderately long stiff bristles, middle tibiæ unclothed.

Allied to *Spanioptila*, from which it differs essentially in the smooth middle tibiæ, and in the hind tibiæ being merely pectinate.

## 229. EUCOSMOPHORA DIVES, sp. n.

*Antennæ* pale greyish, with an æneous sheen at the base. *Palpi* strongly recurved laterally, of even width throughout; whitish. *Head* and *thorax* smooth, shining metallic æneous. *Fore wings* bright metallic æneous, merging into cupreous before the apex; nearly at the base of the costa is an elongate subovate black spot extending to about one-fourth; beyond it an elongate bright orange costal patch, before the middle of which is a shining silvery white oblong costal spot, slenderly black-margined except at its upper edge; the orange patch is also margined beneath by a narrow black shade; a small blackish spot below the costa at the commencement of the costal cilia separates the orange patch from the cupreous apical portion of the wing, but the extreme apex becomes again shining æneous; cilia bronzy grey. *Exp. al.* 8 mm. *Hind wings* and cilia grey. *Abdomen* beneath shining pale æneous, above shaded with grey. *Legs*: hind tibiæ with a comb of short bristles above throughout their length: pale straw-colour, tarsi unspotted.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—GRENADA (Balthazar, 250 ft., and Chantilly Estate, 350 ft., windward side, 13 IV.—15 V.—*H. H. Smith*). Six specimens.

## 230. EUCOSMOPHORA ORNATA, sp. n.

*Antennæ* brownish. *Labial* and *maxillary palpi* white. *Head* and *thorax* white, both laterally tinged with pale olive-brown. *Fore wings* pale olive-brown from the base to nearly two-thirds, thence blending to rich reddish orange; a silver-white dorsal streak throughout, interrupted by a small orange spot at two-thirds the wing-length; in the orange portion of the wing is a very oblique silvery metallic streak before the costal cilia, followed by two minute opposite silvery metallic marginal spots beyond which the costa and costal cilia are shining white, a fuscous streaklet running through them at the apex (accompanied by some

orange) in an uncate form ; cilia below the apex white, an orange line descending through them near their tips, and a dark fuscous line marking their base along the termen ; cilia behind the tornus grey. *Exp. al.* 8 mm. *Hind wings* and cilia brownish grey. *Abdomen* pale brownish ochreous. *Legs* whitish ochreous, tarsal joints faintly dark-spotted ; hind tibiæ distinctly clothed with a stiff pecten of ochreous hairs above.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—GRENADA (Balthazar, 300 ft., windward side, S V.—H. H. Smith). Unique.

### 231. EUCOSMOPHORA INSULELLA, Wlsm.

*Zarathra insulella*, Wlsm. Pr. Z. Soc. Lond. 1891, 538-9 (1892)<sup>1</sup>.

*Zarathra insulsella*, Wlsm. Pr. Z. Soc. Lond. 1891, 548 (1892)<sup>2</sup>.

*Hab.* West Indies—SAN DOMINGO (Puerto Plata, 16 V.—Gudmann) ; ST. VINCENT<sup>1</sup>.

### 232. EUCOSMOPHORA CUPREELLA, sp. n.

*Antennæ* fuscous, longer than the fore wings. *Palpi* somewhat slender, slightly recurved, the apical joint as long as the second ; whitish. *Head* ochreous. *Thorax* cupreous. *Fore wings* coppery brown with a slight gloss ; a slender ochreous line along the dorsum from the base ; a narrow outwardly oblique costal streak a little beyond the middle, white blending into steel-grey at its lower extremity ; a transverse outwardly curved steel-grey band crosses the wing before the apex terminating in an ochreous spot on the costa, the space before it rich chestnut blending into the ground-colour, the space beyond it bright ochreous, separated from the whitish ochreous cilia by a steel-grey line with a small chestnut spot at the apex. *Exp. al.* 9 mm. *Hind wings* and cilia brownish grey. *Abdomen* dark fuscous. *Legs* brownish grey ; hind tibiæ with the apex and spurs white, hind tarsi whitish barred with greyish.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—JAMAICA (Monteague, 1100 ft., XI.—Rendall). Unique.

### 93. DIALECTICA, g. n.

(διαλεκτικός=provocative of discussion.)

*Type*, *Gracilaria scalarrella*, Z.

*Antennæ* not exceeding the length of the fore wings, simple.

*Labial palpi* smooth, drooping ; the apical joint as long as the second, slightly recurved.

*Maxillary palpi* slender, smooth, acute, porrect.

*Head* and *thorax* smooth.

*Fore wings* narrow, elongate, attenuated at the apex, with long cilia, ornamented with recurved lines. *Neuration* : 11 veins, all separate, 7 to costa.

*Hind wings* very narrow, elongate, attenuate; cilia 5. *Neuration*: 7 veins; 3 and 4 coincident, cell open, 5 and 6 stalked.

*Legs*: hind tibiæ pectinate above throughout, inner spurs much longer than the outer.

The pectinate hind tibiæ separate this genus from *Gracilaria* and *Ornia*, to which it is allied.

### 233. DIALECTICA SANCTÆ-CRUCIS, sp. n.

*Antennæ* smoky-whitish. *Palpi* white, unspotted. *Head* and face white. *Thorax* white, tegulæ and sides pale copper-brown. *Fore wings* pale copper-brown, with two large shining white triangular patches on the dorsum, their apices reaching the costa; the first, at the base, covering nearly one-third of the dorsum, the second on the middle, both delicately margined with black scales externally, the second also internally; beyond these at the tornus is an elongate subovate shining silvery-white dorsal patch, above which a short oblique slender white costal streaklet, black-margined on either side, crosses to the termen before the apex; cilia at the apex greyish, with two short dividing streaklets, below the apex coppery brown, at the tornus shining white and behind it greyish. *Exp. al.* 7 mm. *Hind wings* and cilia grey. *Abdomen* shining greyish. *Legs*: posterior pair white with a black dot between the spurs.

*Type*, ♂ Mns. Wlsm.

*Hab. West Indies*—ST. CROIX, 17 V. (*Gudmann*); ST. THOMAS, 2 IV. (*Hedemann*); ST. JAN, 4 IV. (*Gudmann*). Three specimens.

This species belongs to the group of *scalariella*, Z., and is most nearly allied to *molckenii*, Z. Bred by Mr. Gudmann, but the plant not identified.

### 234. DIALECTICA RENDALLI, sp. n.

*Antennæ* brownish. *Palpi* white. *Head* and *thorax* white, the latter shaded across the front with brown. *Fore wings* brown with two broad snow-white transverse fasciæ followed by a slender oblique costal streak and a semicircular subapical costal spot, with some white scales around the apex and about the tornus; the first fascia is broader on the dorsal than on its costal extremity, the second is slightly oblique, tending outwards from the costa, and is somewhat widened towards the dorsum; cilia brownish grey. *Exp. al.* 7 mm. *Hind wings* and cilia dark brownish grey. *Abdomen* greyish brown. *Legs*: hind tibiæ with a comb of bristly scales above; white, shaded along the tibiæ and banded on the tarsi with brown.

*Type*, ♂ Mus. Wlsm.

*Hab. West Indies*—JAMAICA (Monteague, 1100 ft., XI.—*Rendall*). Unique.

Nearly allied to *fasciella*, Chamb., but distinguished by the absence of a third fascia.

235. *DIALECTICA PERMIXTELLA*, sp. n.

*Antennæ* yellowish. *Palpi* white, with a grey spot before the apex of the terminal joint, which is especially conspicuous on the underside. *Head* stramineous. *Thorax* dirty whitish. *Fore wings* dirty whitish on the basal half, straw-ochreous beyond, with greyish-fuscous streaks and reticulations, on the basal half these are placed transversely; a reduplicated patch from the base of the costa, not quite reaching the dorsum, is more conspicuous than some more slender similar markings beyond it; beyond the middle of the wing the markings assume a longitudinal direction, but are curved and interlaced so as to form enclosed patches of the ochreous ground-colour, of which the most conspicuous is an obliquely placed patch at three-fourths the wing-length, its lower extremity directed inwards between two greyish fuscous lines, the lower of which is reduplicated, the upper one being preceded by similar curved lines running between ochreous patches; near the apex is a slightly curved narrow shining whitish fascia, dark-margined on each side, and at the extreme apex is a dark spot followed by a curved line around the termen at the base of the whitish cilia, through which runs a dark uncate streaklet. *Exp. al.* 6–9 mm. *Hind wings* and cilia brownish fuscous. *Abdomen* brownish ochreous. *Hind legs* white, spotted with dark brownish fuscous on the posterior end of the tibiae and at the commencement and middle of the tarsi, the spurs also are dark brownish fuscous.

*Type*, ♀ Mus. Wlsm.

*Hab.* West Indies—S. DOMINGO (Sanches, 14 V.—*Gudmann*); GRENADA (Balthazar, 250 ft., windward side, 1 IV.—4 V.—*H. H. Smith*). Three specimens.

236. *DIALECTICA APICEPUNCTELLA*, Wlsm.

*Gracilaria apicepunctella*, Wlsm. Pr. Z. Soc. Lond. 1891, 540, 548 (1892)<sup>1</sup>.

*Hab.* West Indies—ST. VINCENT<sup>1</sup>.

94. *GRACILARIA*, Hw.237. *GRACILARIA ANEOCAPITELLA*, Wlsm.

*Gracilaria aneocapitella*, Wlsm. Pr. Z. Soc. Lond. 1891, 539–40, 548 (1892).

*Hab.* West Indies—ST. VINCENT<sup>1</sup>.

238. *GRACILARIA SIMILATELLA*, Z.

*Gracilaria similatella*, Z. Hor. Soc. Ent. Ross. XIII. 411–2, Pl. VI. 144 (1877)<sup>1</sup>.

*Hab.* West Indies—ST. CROIX, 30 IV. (*Gudmann*); ST. THOMAS, 14 IV. (*Hedemann*). COLOMBIA—Chipó, 8 VI.<sup>1</sup>

Bred by Mr. Gudmann, but the plant not identified.



## 239. GRACILARIA PULVERELLA, sp. n.

*Antennæ* cinereous, faintly annulated. *Palpi* cinereous. *Head* pale cinereous. *Thorax* dull pale greyish fuscous. *Fore wings* dull pale greyish fuscous, somewhat mottled on their outer half with shining steel-grey (visible only in a strong light); a pale line along the base of the costal cilia continuing round the apex is dilated to the tornus, covering one half the cilia on the terminal margin, thus leaving a small dark hook beyond it at the apex, two slender dark fuscous lines run along the base and along the middle of the cilia respectively. *Exp. al.* 6.5 mm. *Hind wings* and cilia pale brownish grey. *Abdomen* with a slight reddish tinge. *Legs* cinereous.

*Type*, ♀ Mus. Hedemann.

*Hab.* West Indies—SAN DOMINGO (Puerto Plata, 16 V.—Gudmann); ST. THOMAS, 2 IV. (Hedemann). Two specimens.

## 240. GRACILARIA UNDOSA, sp. n.

*Antennæ* very pale fawn, faintly annulated. *Palpi* white. *Head* very pale fawn. *Thorax* white. *Fore wings* very pale fawn, with a slender sinuate white line from the base of the dorsum to the termen below the apex, touching the dorsum at its two downward bends; three oblique white costal streaks, the first scarcely before the middle, the third coalescing with an inverted white spot before the apex, a few dark brown scales around the margins of the streaks; cilia pale fawn with a white streak through them below the apex. *Exp. al.* 5.5 mm. *Hind wings* very pale greyish; cilia pale fawn. *Abdomen* pale fawn-ochreous. *Legs* white, spotted with pale fawn.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—HAYTI (Port-au-Prince, 23 V.—Gudmann); ST. THOMAS, 20 III. (Hedemann). Two specimens.

The smooth crown separates this species from *Lithocolletis*, to which genus it might be referred at first sight.

## 241. GRACILARIA NESITIS, sp. n.

*Antennæ* as long as the fore wings; yellowish white, faintly barred above with brown. *Palpi* slightly recurved; white, the end of the second joint and a band above the middle of the third joint brown. *Head* yellowish white. *Thorax* white, mixed with brown. *Fore wings* umber-brown, with a nearly straight yellowish-white central fascia, before which are two slightly oblique ill-defined transverse streaks, and beyond it a well-defined costal spot and a few scales of the same colour along the dorsum; cilia pale brownish, at the apex white. *Exp. al.* 6 mm. *Hind wings* brownish grey, with tawny-grey cilia. *Abdomen* pale cinereous. *Legs* white, with brown tarsal annulations.

*Type*, ♀ Mus. Gudmann.

*Hab.* West Indies—ST. THOMAS, 18–21 III. (Gudmann, Hedemann). Two specimens.

## 95. CORISCIMUM, Z.

## 242. CORISCIMUM ALBOMARGINATUM, sp. n.

*Antennæ* mouse-grey. *Palpi* white, with a smoky-white brush beneath the second joint and two minute black annulations on the apical joint. *Head* and *thorax* smoky-white, the latter margined with mouse-grey. *Fore wings* dark mouse-grey, with a series of oblique white costal streaklets beginning at one-third from the base, the fifth continued across the wing and meeting a white inverted tornal streaklet, beyond it a sixth costal is inverted before the apex; the dorsum is white throughout; with two dark spots connected with the dark ground-colour in the fold, one before the other behind the middle; a short elongate very oblique white dorsal streaklet ascends before the tornus pointing in the direction of the apex; cilia white, tipped with mouse-grey, with a line of blackish scales along their base sending a short black point through them at the apex; tornal cilia greyish. *Exp. al.* 6 mm. *Hind wings* and cilia grey. *Abdomen* greyish. *Legs* white, speckled with mouse-grey on the hind tibiæ and tarsi.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—ST. THOMAS, 12 III.–14 V. (*Gudmann, Hedemann*). Five specimens.

Bred by Mr. Gudmann and Baron von Hedemann, but the plant not identified.

## 243. CORISCIMUM ATTENUATUM, sp. n.

*Antennæ* yellowish white, delicately annulated. *Palpi* recurved, the second joint slightly tufted beneath; white, tinged externally with pale fawn. *Head* white. *Thorax* whitish. *Fore wings* delicate pale fawn-ochreous, with some whitish mottling on the basal half; a slender whitish line along the dorsal margin bending upwards and meeting at a right angle the second of three white costal streaks (which is somewhat more oblique than the other two), the margins of these streaks are peppered with minute black scales; a white dorsal spot lies before the apex of the outer costal streak, and a white apical spot contains a rounded black dot; a slender fawn line running around the apex at the base of the paler cilia, which are also tipped with fawn at the extreme apex. *Exp. al.* 7 mm. *Hind wings* pale greyish, with pale fawn-grey cilia. *Abdomen* fawn-grey. *Legs* whitish.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—ST. THOMAS, 7–28 III. (*Gudmann, Hedemann*). Three specimens.

Bred by Mr. Gudmann from larvæ feeding on *Croton flavens*.

## VI. ARGYRESTHIANÆ.

## 96. LEUCOPHASMA, g. n.

(λευκός=bright; φάσμα=phantom.)

*Type*, ♂ *Leucophasma phantasmella*, Wlsm.

*Antennæ* nearly as long as the fore wings, somewhat flattened towards the base, simple.

*Labial palpi* slender, short, projecting; second joint sparsely hairy beneath, apical joint as long as the second.

*Maxillary palpi* and *haustellum* obsolete.

*Head* rough above, face smooth.

*Thorax* smooth.

*Fore wings* lanceolate, somewhat widened in the middle, apex depressed, slightly uncate, subacute. *Neuration*: 9 veins; 7 and 8 stalked, enclosing the apex, 3, 5, and 10 absent.

*Hind wings* (under 1) lanceolate, acute, costal margin suddenly depressed from the middle, cilia  $1\frac{1}{2}$ . *Neuration*: 7 veins; 4 absent (coincident with 5); 6 and 7 parallel.

*Legs*: posterior tibiæ clothed with long fine hairs.

Allied to *Cedestis*, Z., but differing in the absence of the *haustellum*.

#### 244. LEUCOPHASMA PHANTASMELLA, sp. n.

*Antennæ* shining white. *Palpi*, *head*, and *face* white. *Thorax* white with a golden-yellow tinge. *Fore wings* white with a golden-yellow suffusion, more apparent on the middle and towards the apical portion of the wing; a small fuscous dot lies at the extreme apex surrounded by golden yellow; cilia white with a golden-yellow sheen. *Exp. al.* 11 mm. *Hind wings* greyish white, cilia with a yellowish tinge. *Abdomen* shining whitish ochreous. *Legs* white; hind tibiæ clothed with long white hairs above.

*Type*, ♂ Mus. Wlsm.

*Hab. West Indies*—GRENADA (Chantilly Estate, 350 ft., windward side, 13 IV.—H. H. Smith). Unique.

#### 97. ARGYRESTHIA, Hb.

##### 245. ARGYRESTHIA PERCUSSELLA, Z. (?).

*Argyresthia percussella*, Z. Hor. Soc. Ent. Ross. XIII. 246-7 (1877)<sup>1</sup>.

*Hab. COLOMBIA*—Bogota, m. III.<sup>1</sup> [? *West Indies*—St. THOMAS, 6-10 III. (Gudmann, Hedemann).]

Two specimens from St. Thomas are probably small varieties of this species, but they are not in sufficiently good condition to determine with certainty.

#### VII. ERECHTHIANÆ.

##### 98. EREUNETIS, Meyr.

##### 246. EREUNETIS MINUSCULA, sp. n.

(= *Nolckenia minuscula*, Z. MS.)

*Antennæ* rather stout, enlarged at the base, simple in the ♂; creamy-white. *Palpi* projecting more than the length of the head beyond it, brush-like beneath; creamy-white. *Head* rough; cream-coloured. *Thorax* cream-coloured. *Fore wings* cream-coloured, more or less shaded and speckled with umber-brown, this shading being concentrated (and therefore more conspicuous) from the

base along the first half of the fold, from beyond the middle of the costa to the lower angle of the cell, and in a subapical oblique costal streak; a dark fuscous streaklet immediately before the extreme apex is preceded by a narrow whitish costal patch; the termen deeply incised below and opposite to it, causing the apex of the wing to turn up sometimes almost at right angles to its surface; cilia creamy whitish, with a slender reduplicated umber-brown line close to their tips. *Exp. al.* 9 mm. *Hind wings*, ♂ with a hyaline patch at the base; pale golden yellowish, sometimes with a cupreous tinge; cilia whitish with a slight golden or cupreous tinge, a slender reduplicated curved line of umber-brown running through them around the extreme apex. *Abdomen* whitish ochreous. *Legs* creamy-white.

*Type*, ♂ ♀ Mus. Wlsm.

*Hab. West Indies*—JAMAICA (Kingston, 26 VII.—Cockerell); ST. CROIX, 22–28 IV. (Gudmann, Hedemann); ST. THOMAS, 7 III.–22 IV. (Gudmann, Hedemann); GRENADA (Balthazar, 250 ft., windward side, 30 IV.—H. H. Smith). Nine specimens.

[COLOMBIA? (Nolcken). Twelve specimens.]

"In repose the moth holds the end of the fore wings curved upwards" (Hedemann).

This species varies in the intensity of its colouring, the postmedian oblique streak or shade being sometimes continued backward at a right angle to the dorsum, while in other specimens the markings are almost obliterated. I have a series in the Zeller Collection named "*Nolkenia minuscula*, Mus. Z.," received from Baron von Nolcken, but unfortunately they are only labelled "*N.*" It is possible they may have been taken in St. Thomas or Jamaica, as the Baron visited these islands in December 1870; but he appears to have found *Micros* scarce in the West Indies, and the specimens were more probably captured in Colombia.

Very closely allied to *Ereunetis iuloptera*, Meyr., an Australian species which also possesses the hyaline patch in the hind wings—it appears to be distinct, but my specimens of *iuloptera* are in poor condition.

#### 247. *EREUNETIS MACULICORNIS*, sp. n.

*Antennæ*: basal joint with a brush of hair-like scales above and beneath, somewhat serrate on the outer half in the ♂; white with three brownish spots, the first at one-third, the second at two-thirds, the third at the apex. *Palpi* slender, second joint scarcely clothed beneath; white. *Head* and *thorax* white. *Fore wings* shining white, with a pale fawn-ochreous shade from the base along the fold, some similar shading on the outer half of the wing tending to fawn, and two slightly oblique fasciæ; cilia pale fawn-ochreous. *Exp. al.* 6 mm. *Hind wings* shining yellowish grey; cilia pale grey. *Abdomen* and *legs* very pale ochreous.

*Type*, ♂ Mus. Hedemann.

*Hab. West Indies*—ST. THOMAS, 7 III.–12 IV. (Hedemann). Three specimens.



"In repose the moth holds the end of the fore wings curved upwards" (*Hedemann*).

This obscure species, which is allied to *minuscule*, can be at once separated by the brownish blotches on the antennæ.

248. *EREUNETIS AEOLELLA*, sp. n.

*Antennæ* longer than the fore wings, slender; pale cinereous. *Palpi* slender, somewhat dependent; second joint longer than the apical, slightly clothed beneath; dirty whitish. *Head* rough-haired; whitish cinereous. *Thorax* whitish cinereous. *Fore wings* with the costa slightly arched, apex moderately acute; pale brownish fawn-colour, longitudinally streaked throughout with whitish-cinereous lines running from the base to the termen—one above the cell, two along it, and one along the fold; the costa also whitish cinereous; a few black scale-points around the termen at the base of the cilia and one a little beyond the middle of the fold; cilia brownish cinereous. *Exp. al.* 8 mm. *Hind wings* and cilia dull greyish. *Abdomen* brownish grey. *Legs* whitish cinereous; hind tibiae with slender greyish hairs above.

*Type*, ♂ ♀ Mus. Wlsm.

*Hab.* West Indies—ST. THOMAS, 7 III.–12 IV. (*Hedemann*).  
Three specimens.

249. *EREUNETIS FRONTELLA*, sp. n.

*Antennæ* white, faintly annulated with fawn-brown. *Head* with a long pointed frontal tuft reaching more than the length of the head beyond it; white. *Labial palpi* slender, the second joint sparsely clothed at its apex; white. *Thorax* whitish, shaded with fawn-brown. *Fore wings* whitish, with a broad longitudinal streak of fawn-brown, sprinkled with black scales, extending from the base to the apex, its width encroaching on the dorsal, but not on the costal, half of the wing; a narrower and slightly paler line follows the dorsum throughout; a slender black streak or spot on the pale interspace at one-third from the base; the costal half of the wing is very obliquely striated with pale fawn-brown—the first streak arising at the base, the second before the middle, a third somewhat darker beyond the middle, and a fourth following the margin to the apex, where there is an elongate black spot; cilia whitish, with a slender fawn-brown line running through their base, defining very clearly the acuminate apex, a rather broader shade of the same colour around their outer extremities (the longer cilia on the dorsal margin are not thus marked). *Exp. al.* 9–10 mm. *Hind wings* very pale greyish, with pale brownish-ochreous cilia. *Abdomen* shining brownish ochreous. *Legs* with long slender hairs above and beneath the tibiae; yellowish white, the tarsi faintly annulated.

*Type*, ♂ ♀ Mus. Wlsm.

*Hab.* West Indies—ST. THOMAS, 13 III.–7 IV. (*Gudmann*, *Hedemann*). Eight specimens.

"In repose the moth holds the end of the wings curved upwards" (*Hedemann*).

This species, which belongs to the group of *symmacha*, Meyr., most resembles *Comodica acotistes*, Meyr., but is not so strongly marked, and does not possess the notch in the antennæ.

250. *EREUNETIS LANCEOLATA*, sp. n.

*Antennæ* cinereous. *Palpi* moderately long, drooping; greyish fuscous. *Head* above whitish cinereous, face greyish fuscous. *Thorax* pale cinereous. *Fore wings* dirty whitish, with a slight yellowish tinge, strongly marked with brownish cupreous in three costal blotches—the first at the base extending to about one-fourth, the second about the middle diffused obliquely outwards to the end of the cell, the third beyond the middle, containing an oblique line and an anteapical triangle of the pale ground-colour, extends very obliquely to a cupreous spot in the apical cilia; the acuminate apex of the wing is defined by a cupreous line along the base of the costal and dorsal cilia, which are of the pale ground-colour. *Exp. al.* 8–10 mm. *Hind wings* as broad as the fore wings, lanceolate acuminate; shining pale grey; cilia the same. *Abdomen* greyish. *Legs*: hind tibiæ hairy; yellowish white, tibiæ banded with fuscous.

*Type*, ♂ Mus. Wlsm.

*Hab. West Indies*—JAMAICA (Mandeville, 1950 ft., X.—*Cockerell*); ST. THOMAS, 7–30 IV. (*Gudmann*, *Hedemann*): four specimens. BRAZIL—Pará (Amazons), IV., 20 VII., 1 IX.–15 XII. (*Schulz*): several specimens.

This species belongs to the group of *symmacha*, Meyr.

251. *EREUNETIS ÆNEOALBIDA*, sp. n.

*Antennæ* pale yellowish. *Palpi* dependent; white. *Head* and face rough; white, the crest brassy-yellow. *Thorax* shining white, touched with brassy-yellow behind. *Fore wings* shining, snow-white, with two transverse fasciæ, three costal streaks, and one dorsal streak, all brassy-yellow—the first fascia close to the base, the second at  $\frac{1}{4}$ , the three costal streaks all very oblique from the middle to the apex, divided from an oblique medio-dorsal streak by a slender black longitudinal line; the second costal streak, which is more slender than the other two, has a fine black line along its inner edge; the dorsal streak is also dark-margined internally; cilia snow-white, with a cuneiform brassy dash along their base from the anal angle, the outer costal streak also running through them at the apex. *Exp. al.* 7–9 mm. *Hind wings* pale greyish, with a slight brassy sheen; cilia very pale grey. *Abdomen* shining pale brownish ochreous. *Legs*: hind tibiæ hairy above; whitish.

*Type*, ♂ ♀ Mus. Wlsm.

*Hab. West Indies*—ST. THOMAS, 6 III.–12 IV. (*Gudmann*, *Hedemann*). Four specimens.

VIII. *TINEINÆ*.99. *TINEA*, L.252. *TINEA BREVISTRIGATA*.

*Antennæ* dirty whitish. *Palpi* whitish, with a fuscous band around the base of the apical joint; second joint with some long separate whitish hairs beneath. *Head* and *thorax* hoary greyish. *Fore wings* hoary whitish, the costa faintly mottled with greyish ochreous, the dorsal half of the wing shaded and speckled with grey: four short dark brownish-fuscous streaks accompanied by a few pale ochreous scales—the first very short, lying on the fold at one-fourth from the base; the second also short, on the cell a little before the middle of the wing; the third larger and more conspicuous, at the end of the fold, reaching the base of the dorsal cilia; the fourth more diffused, running from the end of the cell to the middle of the termen; a slight fuscous shade runs along the base of the hoary-grey cilia. *Exp. al.* 9–12 mm. *Hind wings* shining pale greyish; cilia the same. *Abdomen* cinereous. *Legs* hoary whitish.

*Type*, ♂ Mus. Wlsm.

*Hab. West Indies*—ST. CROIX, 5–6 V. (*Gudmann, Hedemann*); ST. THOMAS, 2 III.–15 IV. (*Gudmann, Hedemann*). Six specimens.

253. *TINEA REDUPLICATA*, sp. n.

*Antennæ* bone-white. *Palpi* externally black nearly to the end of the second joint; apical joint short, also banded with black externally. *Head* hoary. *Thorax* bone-white. *Fore wings* slightly shining, bone-white, speckled with small groups of black and purplish-fuscous scales; a short greyish-fuscous streak along the base of the costa is followed by an irregular series of marginal spots of different sizes to the commencement of the costal cilia; along the fold, before and beyond its middle, are three minute spots of black scales, similar spots extending in a series of three or four along the outer half of the cell, the outer one being opposite to the termen of the cell, others lying on the extreme margins below and above, but a little beyond it; a line of greyish-fuscous scales along the base of the bone-white cilia. *Exp. al.* 12–14 mm. *Hind wings* shining greyish, with a slight æneous tinge; cilia corresponding to this colour along their base, but shining whitish on their outer half. *Abdomen* pale brassy-brown, with silvery transverse lines. *Legs* bone-white, shaded with brownish grey.

*Type*, ♂ Mus. Wlsm.

*Hab. West Indies*—ST. THOMAS, 17–31 III. (*Gudmann*). Two specimens.

254. *TINEA DILUTICORNIS*, sp. n.

*Antennæ* yellowish white. *Palpi* porrect, second joint slightly hairy beneath, apical joint somewhat obtuse, not reaching beyond the head; white, with a fuscous streak on the outer side of the second joint. *Head* hoary whitish. *Thorax* whitish, shaded with

brownish grey. *Fore wings* hoary whitish, suffused and speckled with brownish grey, some dots of the same around the base of the long whitish cilia. *Exp. al.* 12 mm. *Hind wings* pale brassy-yellow; cilia whitish, with an æneous tinge along their base. *Abdomen* yellowish grey. *Legs* whitish.

*Type*, ♀ Mus. Wlsm.

*Hab.* West Indies—ST. THOMAS, 16 IV. (*Hedemann*). Unique.

255. *TINEA SCYTHIOPIELLA*, sp. n.

*Antennæ* bone-white. *Palpi*, second joint recurved, somewhat roughened beneath, apical joint short, projected; white. *Head* and *thorax* white. *Fore wings* rather shining, white, sparsely sprinkled with greyish brown; a slender curved greyish-brown line, leaving the costa near the base, reaches obliquely outwards to the fold; a second, from before the middle of the costa, angulated outwards on the cell, descends obliquely to the middle of the dorsum; a small ill-defined blotch of the same colour rests at the end of the cell, with a spot below it about the tornus, followed by others less conspicuous towards the apex; cilia whitish. *Exp. al.* 14 mm. *Hind wings* yellowish grey; cilia becoming whitish on their outer half. *Abdomen* greyish. *Legs* whitish.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—ST. THOMAS, 8–11 III. (*Gudmann*). Two specimens.

256. *TINEA CRETELLA*, sp. n.

*Antennæ* slender, simple ( $\frac{2}{3}$ ); greyish ochreous. *Palpi* small, slender, drooping, slightly recurved, obtuse, naked; dark fuscous. *Head* rough; white, face fuscous. *Thorax* smooth, white; tegulæ white. *Fore wings* chalky white, with a series of chestnut-brown costal spots and streaks; the first commencing at the base and extending to one-third the length of the wing; after this two smaller length-spots lie on each side of the middle and are followed by a larger, rather triangular, spot of the same colour at the commencement of the costal cilia, beneath this is a minute black dot at the end of the cell; cilia white, with a series of black specks near the base following the termen; tornal cilia greyish. *Exp. al.* 11 mm. *Hind wings* grey, with a lustrous brassy tinge; cilia grey, with a slight rosy tinge. *Abdomen* greyish. *Legs* pale cinereous; hind tibiae loosely clothed above.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—HAYTI (Port-au-Prince, 24 V.—*Gudmann*). Two specimens.

257. *TINEA UMBRATICOSTELLA*, sp. n.

*Antennæ* smoky brownish, the basal joint fringed with white beneath. *Palpi* short, drooping; white. *Head* very rough; white. *Thorax* white, with a median brown streak. *Fore wings* lanceolate; white, the costa smoky-brown throughout, broader beyond than before the middle; a pale chestnut-brown shade along the fold and



at the end of the cell, with three or four minute black dots along the outer half of the dorsum, and one near the upper angle of the cell; cilia pale brownish grey, with a smoky-brown line running through them and continued around the apex. *Exp. al.* 8–10 mm. *Hind wings* pale grey; cilia with a slight brownish tinge. *Abdomen* pale yellowish brown. *Legs* hairy; yellowish white, the tarsi faintly annulated.

*Type*, ♂ ♀ Mus. Wlsm.

*Hab. West Indies*—ST. CROIX, 5 V. (*Hedemann*); ST. THOMAS, 8 III,–13 IV. (*Gudmann*, *Hedemann*); ST. VINCENT (windward side, *H. H. Smith*). Nine specimens.

#### 258. *TINEA TISCHERIELLA*, sp. n.

*Antennæ* yellowish, annulated with olive-brown. *Palpi* drooping; yellowish. *Head* and *thorax* pale yellow. *Fore wings* and *cilia* shining pale yellow, with a broad olive-brown band (occupying more than the costal half of the wing) extending from the base nearly to the apex, with two very slight projections, one before and one beyond the middle, encroaching upon the pale dorsal space. *Exp. al.* 6 mm. *Hind wings* very pale grey; cilia with a faint æneous gloss. *Abdomen* pale shining ochreous. *Legs* hairy above; whitish. *Exp. al.* 6 mm.

*Type*, ♂ Mus. *Hedemann*.

*Hab. West Indies*—HAYTI (Port-au-Prince, 22 V.—*Gudmann*); ST. THOMAS, 11 IV. (*Hedemann*). Two specimens.

#### 259. *TINEA SOLENOBIELLA*, sp. n.

*Antennæ* bone-whitish. *Palpi* very short, slender, drooping; bone-white. *Head* and face rough; bone-whitish. *Thorax* bone-whitish, with a slight brownish tinge. *Fore wings* whitish, sparsely suffused with pale greyish brown, which colour also forms some costal speckling as far as the middle and some ill-defined small costal spots beyond the middle; a spot lies on the disc a little before the middle and there is more speckling of the same colour towards the apex and on the outer half of the dorsum; a waved line of brownish-fuscons atoms runs through the bone-white cilia. *Exp. al.* 9 mm. *Hind wings* shining whitish grey; cilia bone-grey. *Abdomen* greyish. *Legs* whitish; hind tibiae with long slender hairs above.

*Type*, ♀ Mus. Wlsm.

*Hab. West Indies*—ST. CROIX, 21 IV. (*Gudmann*); ST. THOMAS, 7–17 III. (*Gudmann*). Four specimens.

A very inconspicuous and faintly-marked species of the group allied to *cloacella*, Hw.

#### 260. *TINEA FRAGILELLA*, sp. n.

*Antennæ* yellowish white. *Palpi* very slender, drooping, naked; white. *Head* and *thorax* white. *Fore wings* white, neatly speckled throughout with fuscons, tending to black around the extreme

apex, where it forms a semicircular shade, and on a spot before the margin, preceding the semicircle; a pair of costal spots lie before and beyond the middle, the second equidistant between the first and the apex; cilia above the apex white, at the apex shaded with greyish ochreous, a slender shade-line running through them towards the tornus, where also they become whitish. *Exp. al.* 8 mm. *Hind wings* very pale grey; cilia whitish grey. *Abdomen* white. *Legs* white, hind tarsal joints delicately spotted with fuscous.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—HAYTI (Port-au-Prince, 24 V.—Gudmann). Three specimens.

#### 261. *TINEA MINUTELLA*, F.

*Alucita minutella*, F. Ent. Syst. III. (2) 344, No. 51 (1794)<sup>1</sup>. *Tinea minutella*, F. Sppl. Ent. Syst. 500. No. 110 (1798)<sup>2</sup>. *Phalœna* (*Alucita*) *minutella*, Turton, Syst. Nat. III. 383 (1806)<sup>3</sup>.

"*minutella*, 51. *A. alis* albidis: fasciis tribus fuscis. Statura parva præcedentium. Alæ albidæ, fasciis tribus fuscis, prima baseos, tertia apicis.

"*Habitat* in Americæ Insulis, Dom. v. Rohr."<sup>1</sup>. = West Indies<sup>1-3</sup>.

#### 262. *TINEA PLUMELLA*, Wlsm.

*Tinea plumella*, Wlsm. Pr. Z. Soc. Lond. 1891, 508-9, 544 (1892)<sup>1</sup>.

*Hab.* West Indies—ST. CROIX, 21 IV.—7 V. (*Hedemann*); ST. THOMAS, 10-26 IV. (*Gudmann*); ST. VINCENT<sup>1</sup>.

Bred by Mr. Gudmann, who found the larvæ very common on walls and stone fences.

#### 263. *TINEA TETRAONELLA*, sp. n.

*Antennæ* minutely annulated with brownish fuscous and whitish ochreous; basal joint whitish ochreous. *Palpi* very short, drooping; whitish, a minute fuscous ring round the apical joint. *Head* brownish fuscous, mixed with whitish ochreous; face whitish ochreous. *Thorax* brownish fuscous, sprinkled and slightly mottled with whitish ochreous. *Fore wings* brownish fuscous, sprinkled and slightly mottled with whitish ochreous; the only noticeable spot of this colour being before the middle of the dorsum, this and other smaller ones beyond it are minutely speckled with fuscous scales; cilia pale whitish ochreous with a dark parting line running through them. *Exp. al.* 6 mm. *Hind wings* blue-grey; cilia tawny fuscous. *Abdomen* brownish fuscous. *Legs* brownish fuscous, hind tarsal joints banded with white.

*Type*, ♂ Mus. Hedemann.

*Hab.* West Indies—ST. CROIX, 28 IV. (*Hedemann*); ST. THOMAS, 12-28 IV. (*Gudmann*, *Hedemann*). Four specimens.

"Larvæ on walls and stone fences, not so common as *plumella*, Wlsm., and very difficult to breed" (*Gudmann*).

In paler specimens the whitish-ochreous mottling is increased, forming a series of spots along the costa and dorsum. Very near *Tinea plumella*, Wlsm., but apparently distinct; the colour of the fore wings is more suffused.

264. *TINEA PUMILIELLA*, sp. n.

*Antennae* cinereous. *Palpi* very small, drooping, cylindrical; dirty whitish. *Head* and face rough; whitish cinereous above, face inclining to ochreous. *Thorax* whitish cinereous. *Fore wings* whitish cinereous, blotched with ferruginous, especially on the outer portion and on the inner margin of a slender, almost straight, transverse black fascia slightly before the middle; a blackish streak along the base of the costa and a blackish costal spot at two-thirds from the base; on the outer edge of the central fascia is a pale band, almost white, but ill-defined externally; the pale cilia are minutely speckled with black scales. *Exp. al.* 6 mm. *Hind wings* yellowish grey; cilia pale grey. *Abdomen* bronzy grey. *Legs* whitish.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—ST. CROIX, 8 V. (*Hedemann*); ST. THOMAS, 12–30 III. (*Gudmann*, *Hedemann*). Three specimens.

265. *TINEA CUMULATELLA*, Z.

*Tinea cumulatella*, Z. Hor. Soc. Ent. Ross. XIII. 211–2 (1877)<sup>1</sup>.

*Hab.* West Indies—ST. THOMAS, 11 III.–14 IV. (*Gudmann*, *Hedemann*). COLOMBIA, Fusagasuga, 16 IV.<sup>1</sup>

There is one male and three females in the collection, which can be distinguished from *cumulatella*, Z., only by their paler hind wings. The type is unique, and I should not venture to separate them specifically on this ground alone, as I find in the present series some variation in this respect.

266. *TINEA NIGROVITTA*, sp. n.

*Antennae* pale brownish. *Palpi* drooping, slender, second joint sparsely clothed; whitish cinereous. *Head* pale brownish. *Thorax* greyish brown. *Fore wings* greyish brown, indistinctly speckled and smudged with a darker shade of the same colour; cilia slightly paler, with a dark shade running through them near the base. *Exp. al.* 10 mm. *Hind wings* brownish grey, with a conspicuous patch of deep black scales below the costa near the base on the upper side; some short erect bristling hairs on the costal margin; cilia slightly paler than the wings. *Abdomen* pale brownish. *Legs* pale cinereous.

*Type*, ♂ Mus. Gudmann.

*Hab.* West Indies—ST. THOMAS, 8 IV. (*Gudmann*). Unique.

This species is separable from *Tinea cumulatella*, Z., only by the distinct black patch on the upper surface near the base of the hind wings in the male and in its yellower and paler hind wings; in all other respects it almost absolutely resembles it.

267. *TINEA FAMILIARIS*, Z.

*Tinea familiaris*, Z. Hor. Soc. Ent. Ross. XIII. 214-6 (1877)<sup>1</sup>.

*Hab.* **West Indies**—HAYTI (Port-au-Prince, 23 V., *Gudmann*); ST. THOMAS, 13 III. ("in the house"—*Gudmann*). COLOMBIA—Fusagasuga<sup>1</sup>.

Mr. Gudmann bred this species at St. Thomas.

268. *TINEA PALLIDORSELLA*, Z.

*Tinea pallidorsella*, Z. Hor. Soc. Ent. Ross. XIII. 212-4 (1877)<sup>1</sup>.

*Hab.* **West Indies**—ST. THOMAS, 15 III. (*Gudmann*). COLOMBIA—Ubaque, 23 III.<sup>1</sup>

269. *TINEA FRONTESTRIGATA*, sp. n.

*Antennae* ( $\frac{2}{3}$ ); pale ochreous, distinctly annulate with dark fuscous. *Palpi* short, drooping, second joint with a rough brush beneath, apical joint as long as the second; pale ochreous, externally blotched with fuscous on each joint. *Head* whitish ochreous at the sides, banded and shaded above with fuscous; face ochreous. *Thorax* dark fuscous, obscurely speckled with ochreous. *Fore wings* bright ochreous, thickly sprinkled with dark purplish fuscous, which has a tendency to coalesce in a small transverse subcostal patch near the base, in a dorsal patch a little beyond the base, in a strong shade occupying the outer half of the cell and reaching to the costa, and on the apical portion of the wing, where it also sprinkles the pale ochreous cilia over two-thirds their length. *Exp. al.* 7 mm. *Hind wings* narrower than the fore wings; purplish grey, cilia the same. *Abdomen* purplish grey, anal tuft ochreous. *Legs* dark greyish, with pale ochreous tarsal spots and spurs.

*Type*, ♂ Mus. Gudmann.

*Hab.* **West Indies**--ST. CROIX, 2 V. (*Gudmann*). Unique.

270. *TINEA AUROMACULATA*, sp. n.

*Antennae* yellow, faintly annulated with tawny brown. *Palpi* slender, drooping; yellowish, externally tawny. *Head and thorax* golden yellow. *Fore wings* tawny brown with a purplish gloss, marbled with golden yellow, of which there is a spot at the extreme base, a larger spot at the middle of the fold reaching to the dorsum, another spot at the outer end of the fold, a fourth on the disc above and between the last two, and one at the end of the cell reaching to the costa; apex and apical cilia golden yellow, dorsal cilia tawny grey. *Exp. al.* 6.5 mm. *Hind wings* and cilia bronzy grey. *Abdomen* bronzy greyish. *Legs* slightly paler.

*Type*, ♂ Mus. Hedemann.

*Hab.* **West Indies**—ST. THOMAS, 20 III. (*Hedemann*). Unique.

271. *TINEA DIVISA*, sp. n.

*Antennae* of the male pubescent; creamy-white, delicately annu-



lated with brownish fuscous. *Palpi* slender, depressed, whitish; the second joint with some brownish hairs beneath its apex. *Head* rough; white. *Thorax* bronzy fuscous. *Fore wings* and cilia bronzy fuscous; a rather broad cream-white central fascia tinged with brownish ochreous is slightly attenuated toward the costa, from which it is separated by a narrow line of the dark ground-colour; beyond the fascia is a small patch of brownish-ochreous scales at the end of the cell, with a few others at the extreme apex. *Exp. al.* 6.5 mm. *Hind wings* and cilia brownish. *Abdomen* brownish. *Legs* whitish ochreous, with some brownish hairs on the tibiae.

*Type*, ♂ Mus. Hedemann.

*Hab.* West Indies—ST. THOMAS, 12 IV. (*Hedemann*). Unique.

#### 100. TINEOLA, HS.

##### 272. TINEOLA UTERELLA, sp. n.

*Antennae* smoky fawn-colour. *Palpi*: maxillaries not folded; labials short, porrect; smoky fawn. *Head* smoky fawn-colour, face brownish ochreous. *Thorax* smoky fawn. *Fore wings* yellowish fawn, with minute fuscous speckling; a purplish fuscous blotch on the costa near the base is partly connected with a spot of the same colour lying obliquely beneath it on the fold; beyond this are two spots before the middle of the wing, the smaller on the fold, the larger on the disc slightly beyond and above the lower one; a larger spot of the same colour lies at the end of the cell, and there are a few dark scales at the base of the dorsum; (these markings although showing a purplish gloss in a strong light appear blackish under the lens); cilia fawn-grey. *Exp. al.* ♂ 10–♀ 15 mm. *Hind wings* pale grey, with a strong aeneous tinge below the cell; cilia yellowish grey. *Abdomen* yellowish grey. *Legs* yellowish grey, tarsi with obscure darker blotches.

*Type*, ♂ ♀ Mus. Wlsm.

*Hab.* West Indies—ST. THOMAS, 14–24 III. (*Gudmann*, *Hedemann*): three specimens. BRAZIL—Pará (Amazon), 17 IX.–14 XII. (*Schulz*): a long series.

Bred by Messrs. Schulz, Gudmann, and Baron von Hedemann. Mr. Gudmann notes it as found “on trunks,” while Mr. Schulz writes:—“The Amazonian clothes moth, their larva and pupa-cases called ‘traças’ in Portuguese. These traças are very frequent in the houses in Pará, keeping on the walls of the rooms and are very injurious to clothes.” All three observers send with this species a flattened bladder-shaped case composed of silk and grains of sand, wide in the middle, narrowed towards each extremity and open at both ends. *Ecia maculata*, Wlsm., a species which although belonging to a different family is almost inseparable from *uterella* in colour and markings, is found likewise in St. Thomas and at Pará at the same time as *uterella*. Baron von Hedemann writes of *Ecia maculata*, “very common on the inner walls of nearly

every house in St. Thomas"; Mr. Schulz, who apparently did not distinguish the two insects, notes *uterella* as the domestic species; while Mr. Gudmann found it on the trunks of trees; and Baron von Hedemann, who found the cases very common on the inner walls of houses, only succeeded in breeding one specimen. The larva of *maculata* is unknown.

#### 101. MYRMECOZELA, Z.

##### 273. MYRMECOZELA OCHRACEELLA, Tgstr.

*Tinea ochraceella*, Tgstr. Not. Sällsk. Faun. et Flor. Fenn. För. II. 111 (1847)<sup>1</sup>. *Myrmecozela ochraceella*, Z. Lin. Ent. VI. 176-7 (1852)<sup>2</sup>; Stgr. & Wk. Cat. Lp. Eur. 271, 425. No. 1435 (1871)<sup>3</sup>; Mschl. Ab. Senck. Nat. Ges. XV. 339, 354 (1890)<sup>4</sup>; Wlsm. Pr. Z. Soc. Lond. 1891, 517, 545 (1892)<sup>5</sup>.

*Hab.* EUROPE (Finland, Switzerland, Scotland, England)<sup>1-5</sup>. *Larva* in Ants' nests, VIII.-X. **West Indies**—PORTORICO<sup>4, 5</sup>.

If this species is correctly determined by Möschler its occurrence in the West Indies is a remarkable contribution to the study of Geographical Distribution. It has not yet been detected in the United States, and a myrmecophilous species could hardly be imported from Europe to Portorico. Moreover, the localities in which it is found in Europe are not such as could warrant the suggestion of its having been introduced from the West Indies.

#### 102. XYLESTHIA, Clem.

[Clem. Pr. Ac. Nat. Sc. Phil. XI. 259, 262 (1859); Stn. Tin. N. Am. 53-4, 59, 60, fig. 5 (1872).]

##### 274. XYLESTHIA AUSTRALIS, sp. n.

*Antennae* simple; dusky cinereous. *Palpi* with the second joint widely and roughly clothed beneath, apical joint almost concealed; cinereous speckled with fuscous. *Head* and *thorax* cinereous. *Fore wings* arched at the base, apex depressed, rounded, termen oblique; cinereous dusted with fuscous, an indication of an obscure cloud-like fuscous spot at the end of the cell is followed by four cloud-like spots above at the base of the costal cilia; cilia cinereous, with a fuscous shade-line running through them. *Exp. al.* 16-20 mm. *Hind wings* broader than the fore wings, rounded at the apex; brownish fuscous, cilia the same. *Abdomen* greyish fuscous. *Legs* very pale cinereous.

*Type*, ♀ Mus. Wlsm.; (*Paratype* ♂ Mus. Gudmann).

*Hab.* **West Indies**—HAYTI (Port-au-Prince, 23-25 V., Gudmann); ST. THOMAS, 9 III. (Gudmann). Three specimens.

The male specimen from St. Thomas is more distinctly marked, having fuscous spots along the costal margin, a fuscous shade along the disc from the base, and the terminal cilia are mottled. It seems to be, however, only a well-marked variety.

## 103. AMYDRIA, Clem.

[Clem. Pr. Ac. Nat. Sc. Phil. XI. 260, 262 (1859); Stn. Tin. N. Am. 55, 59, 60, fig. 2 (1872).]

## 275. AMYDRIA ANAPHORELLA, Wlsm.

*Amydria anaphorella*, Wlsm. Pr. Z. Soc. Lond. 1891, 517, 545 (1892)<sup>1</sup>.

*Hab. West Indies*—ST. VINCENT<sup>1</sup>.

## 104. PEXICNEMIDIA, Mschl.

[Mschl. Ab. Senck. Nat. Ges. XV. 337–8 (1890).]

## 276. PEXICNEMIDIA MIRELLA, Mschl.

*Pexicnemidia mirella*, Mschl. Ab. Senck. Nat. Ges. XV. 338, 354 (1890)<sup>1</sup>; Wlsm. Pr. Z. Soc. Lond. 1891, 518, 545 (1892)<sup>2</sup>.

*Hab. West Indies*—PORTORICO<sup>1, 2</sup>.

## 105. TIQUADRA, Wkr.

TIQUADRA, Wkr. Cat. Lp. Ins. B.M. XXVIII. 519 (1863); = *OSCELLA*, Wkr. Cat. Lp. Ins. B.M. XXIX. 783–4 (1864); = *MANCHANA*, Wkr. Cat. Lp. Ins. B.M. XXXV. 1818 (1866); n. syn. = *VENTIA*, Wkr. Cat. Lp. Ins. B.M. XXXV. 1838–9 (1866); = *ACUREUTA*, Z. Hor. Soc. Ent. Ross. XIII. 198–9 (1877).

## 277. TIQUADRA ASPERA, Z.

*Acureuta aspera*, Z. Hor. Soc. Ent. Ross. XIII. 199–201 (1877)<sup>1</sup>. *Tiquadra aspera*, Mschl. Ab. Senck. Nat. Ges. XV. 339, 354 (1890)<sup>2</sup>; Wlsm. Pr. Z. Soc. Lond. 1891, 518, 545 (1892)<sup>2</sup>.

*Hab. West Indies*—PORTORICO<sup>2, 3</sup>. COLOMBIA<sup>1, 3</sup>.

## 278. TIQUADRA LENTIGINOSA, Z.

*Acureuta lentiginosa*, Z. Hor. Soc. Ent. Ross. XIII. 201–2 (1877)<sup>1</sup>. *Tiquadra lentiginosa*, Wlsm. Pr. Z. Soc. Lond. 1891, 518, 545 (1892)<sup>2</sup>.

*Hab. West Indies*—TRINIDAD (Port-of-Spain)<sup>2</sup>. BRAZIL<sup>1</sup> (Rio Janeiro<sup>1</sup>, Petropolis)<sup>2</sup>. PERU (Ropaybamba, 30 XII)<sup>1, 2</sup>.

## 106. MOROPHAGA, HS.

## 279. MOROPHAGA HIRSUTEVESTITA, sp. n.

*Antennae* ♂, slightly serrate, ciliate ( $\frac{1}{3}$ ); umber-brown, finely annulate with ochreous; basal joint brownish ochreous. *Palpi* (broken, but decidedly rough); umber-brown mixed with pale ochreous (so far as they are visible). *Head* rough; *head* and *thorax* umber-brown mixed with some ochreous scales. *Fore wings*: costa somewhat arched, apex depressed, termen oblique, somewhat securiform, veins 8 and 9 stalked; dark umber-brown, with scattered spots of ochreous scales, especially noticeable along the costa,

where they form a somewhat regular series, and at the base of the cilia which correspond to the wing-colouring; the dark colouring is concentrated in a patch at the end of the cell, reaching to the costa, and is followed by a paler space and preceded by a paler spot. *Exp. al.* 25–27 mm. *Hind wings* and cilia pale brownish cinereous. *Abdomen* pale brownish cinereous. *Legs* brownish cinereous, tarsal joints shaded with number-brown.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—JAMAICA (*Coll. Ragonot*). Two specimens received from the late Monsr. Ragonot.

## 280. MOROPHAGA ? ANGULATELLA, sp. n.

*Antennae* stout, slightly serrate; shining whitish ochreous, a black spot beneath at the outer extremity of the elongate basal joint. *Palpi* whitish ochreous, the apical joint somewhat stout, as long as the second, the second joint with a large triangular tuft beneath (as in some species of the genus *Ypsolophus*, but the tuft is much less compact and more hirsute) shaded with brown externally almost to the outer edge of the tuft. *Head* brown. *Thorax* whitish, edged anteriorly with brown. *Fore wings* narrow elongate, sub-ovate; creamy whitish, a large brownish-fuscous patch extending from the base along the costal half to one-fourth from the apex, following the fold, its lower edge is angulated upward in the middle, its outer edge passing obliquely to the costa almost parallel with the termen, the costal and terminal margins are mottled with alternate smoky white and brownish fuscous, the cilia suffused with smoky brown. *Exp. al.* 16 mm. *Hind wings* brownish grey, a pale line running along the base of the cilia. *Abdomen* missing. *Legs* bone-whitish.

*Type*, ♂ Mus. Wlsm.

*Hab.* West Indies—DOMINICA (Point Michell).

This species differs from *Amydria* and *Xylesthia* in having veins 8 and 9 of the fore wings stalked, and from *Morophaga*, with which it agrees in neuration, in the longer apical joint of the palpi and in the second joint being more triangularly clothed.

## IX. SETOMORPHINÆ.

### 107. SETOMORPHA, Z.

#### 281. SETOMORPHA RUPICELLA, Z.

*Setomorpha rupicella*, Z. Handl. Kong. Svensk. Vet.-Ak. 1852, 95–6<sup>1</sup>; Wlsm. Pr. Z. Soc. Lond. 1891, 511, 544 (1892)<sup>2</sup>.

*Hab.* West Indies—CUBA (Havannah)<sup>1, 2</sup>; HAYTI (Port-au-Prince, 25 V.—Gulmann). BRAZIL—Para, X.–XII. (*Schulz*).

#### 282. SETOMORPHA GRENADILLA, sp. n.

*Antennae* greyish fuscous. *Palpi* porrect, second joint slightly hirsute; pale fawn. *Head* rough above; pale fawn. *Thorax* pale fawn. *Fore wings* pale fawn, shaded round the margins with



small broken patches of umbreous scales, these are somewhat aggregated at the base of the costa, in an elongate patch above the middle of the wing, in a second patch extending from the outer end of the cell to the termen, and near the base of the dorsum; cilia pale fawn mottled with umbreous along their base. *Exp. al.* 10 mm. *Hind wings* shining reddish grey; cilia fawn-grey. *Abdomen* fawn-grey shaded with umbreous. *Hind tibiae* much tufted above and beneath; greyish ochreous, the spurs paler; hind tarsi mottled with greyish fuscous.

*Type*, ♂ Mus. Wlsm.

*Hab. West Indies*—GRENADA (Balthazar, 250 ft., windward side, 5-10 IV.—H. H. Smith). Two specimens.

#### X. ANAPHORINÆ.

##### 108. ATOPOCERA, g. n.

(ἄτοπος = strange; κέρας = a horn.)

*Type*, ♂ *Atopocera occultum*, Wlsm.

*Antennæ* ♂, stout, simple, tapering outwards.

*Labial palpi* ♂, strongly recurved to front of thorax; second joint thickened, somewhat closely clothed, apical joint as long as the second, smooth.

*Maxillary palpi* small, slender.

*Head* smooth.

*Thorax* not tufted.

*Fore wings* with the costa slightly arched, apex obtuse, termen oblique. *Neuration*: 12 veins, 7 and 8 stalked enclosing the apex, the rest separate.

*Hind wings* slightly broader than the fore wings. *Neuration*: 8 veins all separate.

*Abdomen* somewhat slender.

*Legs*, hind tibiae sparsely hairy above.

This genus constitutes a new section of the *Anaphorinæ* characterized by having in the fore wing veins 7 and 8 stalked instead of 8 and 9.

##### 283. ATOPOCERA OCCULTUM, sp. n.

*Antennæ* brownish grey. *Palpi* brownish grey, the second joint somewhat shaded with fuscous externally. *Head* and *thorax* brownish grey. *Fore wings* fawn-brown, with a few greyish-fuscous scales scattered about the outer third and a scarcely noticeable group of fuscous scales at the upper angle of the cell; cilia fawn-brown, sparsely speckled with greyish fuscous. *Exp. al.* 12 mm. *Hind wings* brownish fuscous; cilia paler, divided by a brownish-fuscous shade. *Abdomen* brownish fuscous; uncus single, lateral claspers scarcely spatulate. *Legs* cinereous.

*Type*, ♂ Mus. Gudmann.

*Hab. West Indies*—HAITI (Cap Haiti, 18 V.—Gudmann). Unique.

## 109. CENOGENES, Wlsm.

## 284. CENOGENES? OCHRACEA, Mschl.

*Cenogenes? ochracea*, Mschl. Ab. Senck. Nat. Ges. XV. 337, 354 (1890)<sup>1</sup>; Wlsm. Pr. Z. Soc. Lond. 1891, 515, 544 (1892)<sup>2</sup>.

*Hab. West Indies*—PORTORICO<sup>1, 2</sup>.

## 110. HYPOCLOPUS, Wlsm.

## 285. HYPOCLOPUS PARVUS, sp. n.

= *Cenogenes pusilla*, Wlsm. (*partim*) Pr. Z. Soc. Lond. 1891, 514, 544 (1892)<sup>1</sup>.

*Antennae* greyish ochreous. *Palpi*, ♂ recurved to back of thorax; greyish touched with fuscous at the sides, apical joint tipped with ochreous; ♀ porrect. *Head* and *thorax* greyish ochreous intermixed with fuscous. *Fore wings* pale greyish ochreous, much speckled and blotched with fuscous which is concentrated in three connected patches (one at the end of the cell, one below it, and one at the base), leaving the pale ground-colour more conspicuous in two ovate patches (the first on the middle of the wing, the second beyond it) and in a dorsal patch obtusely angulated upwards before the middle and slightly angulated beyond the middle, a few fuscous specklings along its lower edge; cilia agreeing in colour with the wing. *Exp. al.* ♂ 15.5–17 mm.; ♀ 21 mm. *Hind wings* and cilia dull greyish. *Abdomen* greyish. *Legs* greyish, tarsi with pale subochreous speckling.

*Type*, ♂ Mus. Wlsm.; ♀ Mus. Gudmann.

*Hab. West Indies*—ST. THOMAS, 18 III.–8 IV. (Gudmann, Hedemann); DOMINICA<sup>1</sup> (Point Michell, 29 V.). Eleven specimens.

This species varies considerably: in the intermediate form which I have described as the type the dark and pale markings are sharply defined; in the extreme forms either the dark or the paler colour predominates and tends to efface the pattern.

The specimen which I recorded (Pr. Z. Soc. Lond. 1891, 514) from Dominica as *Cenogenes pusilla*, Z., was not in good condition, and the reception of better specimens from the same island proves it to be *Hypoclopus parvus*. My notes on the structure of "*Anaphora pusilla*, Z." refer truly to that species, but the additional locality is erroneous, and *Cenogenes pusilla*, Z., must be removed from the West Indian list.

## 111. EULEPISTE, Wlsm.

## 286. EULEPISTE UMBRATIPALPIS, Wlsm.

*Eulepiste umbratipalpis*, Wlsm. Pr. Z. Soc. Lond. 1891, 511, 544, Pl. XLI. 10 (1892)<sup>1</sup>.

*Hab. West Indies*—SAN DOMINGO<sup>1</sup>.

## 112. FELDERIA, Wlsm.

## 287. FELDERIA DIMIDIELLA, Wlsm.

*Felderia dimidiella*, Wlsm. Pr. Z. Soc. Lond. 1891, 516, 545, Pl. XLI. 15 (1892)<sup>1</sup>.

*Hab.* West Indies—CUBA<sup>1</sup>.

## 113. PILANAPHORA, g. n.

(πίλος=felt; *Anaphora*, nom. gen.)

Type, ♂ ♀ *Pilanaphora hedemanni*, Wlsm.

*Antennae*: ♂ somewhat flattened, serrate towards the apex.

*Labial palpi*: ♂ very strongly recurved, reaching to the back of the thorax, brush-like throughout; ♀ porrect, fully twice the length of the head beyond it.

*Fore wings*: ♂ scarcely more than twice as long as broad, with a long fringe along the basal third of the costa (bent back and lying flat on the wing); ♀ without the costal fringe. *Neuration*: 12 veins all separate, 8 to apex.

*Hind wings*: ♂ with a strong upstanding fringe extending from the base along the lower edge of the cell to vein 2, the abdominal margin densely hairy; ♀ without the upstanding fringe. *Neuration*: 8 veins all separate.

*Abdomen* densely hairy.

*Legs*: all the tibiae densely clothed in the male, less strongly in the female.

Allied to *Acrolophus*, Poey, and *Anaphora*, Clem.; but readily separated by the erect fringe on the hind wings.

## 288. PILANAPHORA HEDEMANNI, sp. n.

*Antennae* brownish ochreous. *Palpi*, *head*, and *thorax*: ♂ reddish fawn-grey; ♀ mouse-colour. *Fore wings*: ♂ tawny reddish, speckled along the costa with purplish fuscous, the margins of the cell also marked out with purplish fuscous, which is intensified at the end of the cell and in a triangular blotch on its lower edge before the angle; a whitish-ochreous streak follows the line of the fold, scarcely interrupted by a dark spot near its base, but incised at its upper edge by the triangular spot before mentioned; at the end of the cell a small reduplicated dot of white raised scales (probably very fugitive), which is connected by a pale whitish streak with a pair of purplish-fuscous spots nearer to the termen; cilia conforming to the wing-colour, somewhat speckled: ♀ mouse-colour, with the markings less distinct, and the whole wing-surface more evenly and distinctly speckled with darker spots; cilia slightly darker than the wings. *Exp. al.* ♂ 20–22 mm.: ♀ 24–26 mm. *Hind wings*, ♂ greyish fuscous, the raised tuft fawn-ochreous, and the hairs along the abdominal margin also inclining to ochreous; cilia shining, paler than the wings; ♀ shining, fuscous with a purplish gloss; cilia slightly paler than the wings. *Abdomen*: ♂ thickly clothed with hoary

grey, anal tuft inclining to ochreous; ♀ cinereous, with paler hairs towards the base. *Legs* subochreous, dusted with greyish fuscous.

*Type*, ♂ Mus. Wlsm.; ♀ Mus. Hedemann.

*Hab. West Indies*—St. CROIX, 21 IV.–13 VI. (*Gulmann, Hedemann, Pontoppidan*). Ten specimens.

In the absence of evidence to the contrary, I must regard the ten specimens before me as belonging to one variable species; the general pattern of the markings is retained wherever these are traceable, but in some they are entirely obliterated; the ground-colour varies from tawny reddish to pale cinereous, with more or less suffusion. The females also exhibit pale and dark varieties.

#### 114. ANAPHORA, Clem.

##### 289. ANAPHORA POPEANELLA, Clem.

= *AGROTIPENNELLA*, Grt.<sup>14</sup>; = *SCARDINA*, Z.<sup>14</sup>

*Anaphora popeanella*, Clem. Pr. Ac. Nat. Sc. Phil. XI. 261 (1859)<sup>1</sup>; Stn. Tin. N. Am. pp. vi, 57–8, 60. fig. 4 (1872)<sup>2</sup>. *Anaphora agrotipennella*, Grt. Can. Ent. IV. 137–8 ♂, 142–3 ♀ (1872)<sup>3</sup>. *Anaphora popeanella*, Grt. Can. Ent. IV. 137–8, 142–3 (1872)<sup>4</sup>. *Anaphora scardina*, Z. Verh. z.-b. Ges. Wien, XXIII. 215–6 (1873)<sup>5</sup>. *Anaphora agrotipennella*, Mrt. Can. Ent. VIII. 185–6 (1876)<sup>6</sup>; Chamb. Bull. U.S. G.G. Surv. IV. 110<sup>7</sup>, 129 (1878)<sup>8</sup>. *Anaphora popeanella*, Chamb. Bull. U.S. G.G. Surv. IV. 129 (1878)<sup>9</sup>. *Anaphora scardina*, Chamb. Bull. U.S. G.G. Surv. IV. 129 (1878)<sup>10</sup>. *Anaphora agrotipennella*, Wlsm. Tr. Am. Ent. Soc. X. 167–8 (1882)<sup>11</sup>. *Acrolophus agrotipennella*, Grt. Can. Ent. XVIII. 199 (1886)<sup>12</sup>. *Anaphora popeanella*, Wlsm. Tr. Ent. Soc. Lond. 1887, 138<sup>13</sup>, 161–3, Pl. VIII. 11, 11 a–c<sup>14</sup>; Mschl. Ab. Senck. Nat. Ges. XV. 337, 354 (1890)<sup>15</sup>; Riley, Smith's List Lep. Bor. Am. 95. No. 5061 (1891)<sup>16</sup>; Wlsm. Pr. Z. Soc. Lond. 1891, 515, 545 (1892)<sup>17</sup>.

*Hab. UNITED STATES*<sup>1–14, 16–17</sup>, VI.–VII. Larva roots of *Trifolium pratense*, IV.–V.<sup>6, 7, 13</sup>. *West Indies*—PORTORICO<sup>15, 17</sup>.

##### 290. ANAPHORA TRIATOMELLA, sp. n.

*Antennæ*: ♂ serrate towards the apex; whitish ochreous. *Palpi*: ♂ recurved to beyond the back of the thorax, apical joint roughly clothed; whitish ochreous in front, reddish brown on the apical joint; ♀ porrect, twice the length of the head beyond it; pale cinereous. *Head and thorax*: ♂ mouse-grey, mixed with reddish brown; ♀ pale cinereous. *Fore wings*: ♂ whitish ochreous along the costa and dorsum, transversely streaked and mottled with mouse-grey; suffused with reddish brown along and beyond the cell, much shaded and blotched with mouse-grey, which reaches the dorsum near the base and sends an angular projection downward across the fold opposite to the middle of the dorsum; at the end of the cell are three tooth-like dots of white scales in an even parallel transverse series; cilia mouse-grey, mottled with



reddish-brown: ♀ pale cinereous throughout, more or less speckled with greyish fuscous, the markings confined to three greyish-fuscous spots, one about the middle of the cell, another at the end of the cell, and the triangular one (as in the male) coming halfway between them on the lower edge of the cell, its apex crossing the fold. *Evp. al.* ♂ 20 mm.; ♀ 23 mm. *Hind wings* greyish fuscous; cilia scarcely paler. *Abdomen* greyish. *Legs* whitish ochreous.

*Type*, ♂ ♀ Mus. Hedemann.

*Hab.* West Indies—ST. THOMAS, 20 III.–10 IV. (*Gudmann, Hedemann*). Five specimens.

This species is very variable in colour in both sexes, and the markings in some varieties are obliterated; but the white spots appear to be constant in the male.

#### 291. ANAPHORA ARCASALIS, Wkr.

*Palthis? arcasalis*, Wkr. Cat. Lp. Ins. B.M. XVI. 153–4 (1858)<sup>1</sup>.  
*Anaphora arcasalis*, Wlsm. Pr. Z. Soc. Lond. 1891, 515, 545 (1892)<sup>2</sup>.

*Hab.* West Indies—SAN DOMINGO<sup>1,2</sup>.

#### 292. ANAPHORA MIMASALIS, Wkr.

*Palthis? mimasalis*, Wkr. Cat. Lp. Ins. B.M. XVI. 154 (1858)<sup>1</sup>.  
*Anaphora mimasalis*, Wlsm. Pr. Z. Soc. Lond. 1891, 515, 545 (1892)<sup>2</sup>.

*Hab.* West Indies—SAN DOMINGO<sup>1,2</sup>.

#### 293. ANAPHORA NOCTUINA, Wlsm.

*Anaphora noctuina*, Wlsm. Pr. Z. Soc. Lond. 1891, 515–6, 545, Pl. XLI. 14 (1892)<sup>1</sup>.

*Hab.* West Indies—CUBA<sup>1</sup>.

#### 115. ACROLOPHUS, Poey.

##### 294. ACROLOPHUS VITELLUS, Poey.

*Acrolophus vitellus*, Poey, Cent. Lp. Cuba, Pl. (XX.) (1833)<sup>1</sup>; Wlsm. Tr. Ent. Soc. Lond. 1887, 148<sup>2</sup>; Pr. Z. Soc. Lond. 1891, 512, 544, Pl. XLI. 11 (1892)<sup>3</sup>.

*Hab.* West Indies—CUBA<sup>1-3</sup>; (? PORTORICO<sup>3</sup>).

##### 295. ACROLOPHUS? REFLEXUS, F.

*Bombyx reflexa*, F. Ent. Syst. III. (1) 448. No. 128 (1793)<sup>1</sup>.  
*Phalœna (Bombyx) reflexa*, Turton, Syst. Nat. III. 212 (1806)<sup>2</sup>.

“*reflexa*. 128. *B. alis* deflexis cinereo fuscoque variis, palpis reflexis longitudine thoracis.

“Minuta. Antennæ simplices, cinereæ. Palpi compressi, hirsuti, inter antennæ reflexi, ferruginei usque ad alas pertingunt. Alæ anticæ cinereæ lunula magna, media liturisque fuscis. Posticæ cinereæ.

“*Habitat* in Americæ meridionalis, Dr. Pflug.”<sup>1</sup>

= West Indies<sup>1,2</sup> (probably St. Thomas or St. Croix).

## 296. ACROLOPHUS POEYI, Wlsm.

*Acrolophus poeyi*, Wlsm. Pr. Z. Soc. Lond. 1891, 512-3, 544, Pl. XLI. 12 (1892)<sup>1</sup>.

*Hab.* West Indies—ST. VINCENT<sup>1</sup>.

## 297. ACROLOPHUS NIVEIPUNCTATUS, Wlsm.

*Acrolophus niveipunctata*, Wlsm. Pr. Z. Soc. Lond. 1891, 513, 544 (1892)<sup>1</sup>.

*Hab.* West Indies—CUBA<sup>1</sup>.

## 298. ACROLOPHUS PLUMIFRONTELLUS, Clem.

= *BOMBYCINA*, Z.<sup>6</sup>

*Anaphora plumifrontella*, Clem. Pr. Ac. Nat. Sc. Phil. XI. 261 (1859)<sup>1</sup>; Stn. Tin. N. Am. pp. vii, 39, 57, 59, 60 (1872)<sup>2</sup>. *Anaphora bombycina*, Z. Verh. z.-b. Ges. Wien, XXIII. 216-7 (1873)<sup>3</sup>; Chamb. Bull. U.S. G.G. Surv. IV. 129 (1878)<sup>4</sup>. *Anaphora plumifrontella*, Chamb. Bull. U.S. G.G. Surv. IV. 129 (1878)<sup>5</sup>. *Acrolophus plumifrontellus*, Wlsm. Tr. Ent. Soc. Lond. 1887, 149-50, Pl. VII. 5<sup>6</sup>; Mschl. Ab. Senck. Nat. Ges. XV. 336, 354 (1890)<sup>7</sup>; Riley, Smith's List Lep. Bor. Am. 94. No. 5048 (1891)<sup>8</sup>; Wlsm. Pr. Z. Soc. Lond. 1891, 513-4, 544 (1892)<sup>9</sup>.

*Hab.* UNITED STATES<sup>1-9</sup>. West Indies—CUBA<sup>9</sup>; PORTORICO<sup>7,9</sup>.

## 299. ACROLOPHUS WALSHINGAMI, Mschl.

*Acrolophus walsinghami*, Mschl. Ab. Senck. Nat. Ges. XV. 335, 336, 354 (1890)<sup>1</sup>; Wlsm. Pr. Z. Soc. Lond. 1891, 514, 544, Pl. XLI. 13 (1892)<sup>2</sup>.

*Hab.* West Indies—PORTORICO<sup>1,2</sup>.

## 300. ACROLOPHUS LEUCODOCIS, Z.

*Anaphora leucodocis*, Z. Hor. Soc. Ent. Ross. XIII. 197-8 (1877)<sup>1</sup>; Wlsm. Tr. Ent. Soc. Lond. 1887, 159-60<sup>2</sup>. *Acrolophus leucodocis*, Wlsm. Pr. Z. Soc. Lond. 1891, 514, 544 (1892)<sup>3</sup>.

*Hab.* West Indies—CUBA<sup>1,3</sup>. (? BRAZIL<sup>1,3</sup>).

## 116. PSEUDANAPHORA, Wlsm.

## 301. PSEUDANAPHORA NOCTIVAGA, sp. n.

*Antennæ* purplish fuscous above, ochreous beneath. *Palpi* pale ochreous, a dark fuscous patch externally at the base of the first joint. *Head* ochreous, with a purplish shade; face pale ochreous. *Thorax* purplish fuscous. *Fore wings* purplish fuscous, mottled with pale ochreous, the costa reticulated with dark tawny fuscous throughout; an oblique small tawny-fuscous patch extending on either side of the fold near the base; a larger patch of the same colour lying on the outer half of the fold, not reaching the dorsum but extending upwards at its inner extremity across the cell; this is followed by some pale ochreous mottling, which also

precedes and follows a third conspicuous quadrangular tawny fuscous patch at the end of the cell: cilia pale ochreous, heavily sprinkled with purplish fuscous. *Exp. al.* 16 mm. *Hind wings* greyish brown. *Abdomen* greyish brown; anal tuft slightly paler. *Legs* greyish cinereous, hind tarsal joints banded with purplish fuscous.

*Type*, ♂ Mus. Wlsm.

*Hab. West Indies*—GRENADA (Balthazar, 250 ft., windward side, 10 V.—*H. H. Smith*). Unique.

# 117. BAZIRA, Wkr.

=§ *EDDARA*, Wkr.

## 302. BAZIRA XYLINELLA, Wkr.

*Eddara xylinella*, Wkr. Cat. Lp. Ins. B.M. XXVIII. 518 (1863)<sup>1</sup>. *Bazira xylinella*, Wkr. Cat. Lp. Ins. B.M. XXX. 1009 (1863)<sup>2</sup>; Wlsm. Pr. Z. Soc. Lond. 1891, 516, 545 (1892)<sup>3</sup>.

*Hab. West Indies*—JAMAICA<sup>1-3</sup>.

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Invalid names are printed in italics; = denotes that the name in italics is a synonym; § = a homonym; † = wrongly written either in inception or in adoption; ‡ signifies the correction of a name hitherto wrongly written; \* = invalid as not containing the type of the conception. Names within square brackets are referred to in this paper, but are not connected with the West-Indian fauna.

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<i>biferana</i> , Wkr. ....	159	p. 131.]	
<i>bimarginellum</i> .....	215	<i>crocipunctella</i> .....	43
<i>biniveipunctata</i> .....	49	<i>cruciferarum</i> , Z. ....	153
<i>bipunctatus</i> , <i>Mschl.</i> ....	15	<i>cubana</i> , H.S. ....	19
<i>bombycina</i> , Z. = <i>plumifron-</i>		<i>cumulatella</i> , Z. ....	265
<i>tellus</i> , Clem. ....	298	<i>cuprea</i> .....	136
<i>bosquella</i> , Chamb. ....	46	<i>cupreella</i> ....	232
<i>brevipalpella</i> .....	99	<i>curvipunctella</i> .....	129
<i>breviplicana</i> .....	196	§ <i>dentella</i> , F. = <i>sinuata</i> , F. ..	109
<i>brevistrigata</i> .....	252	<i>desectella</i> , Z. ....	64
<i>bunteana</i> , Rbs. ....	205	<i>desmodiella</i> , Clem. ....	224
[ <i>burmanniana</i> , Cram. &		<i>diffusalis</i> , Wkr. = <i>caffer</i> , Z. .	2
<i>Stoll</i> ( <i>Gonioterma</i> ), p. 101.]		<i>diluticornis</i> .....	254
<i>caffer</i> , Z. ....	2	<i>dimidiella</i> .....	287
<i>calidana</i> , Z. ....	192	<i>diminutana</i> .....	197
<i>calligera</i> , Z. ....	145	<i>direptalis</i> , Wkr. = <i>cosmodac-</i>	
<i>calvifrons</i> .....	183	<i>tyla</i> , Hb. ....	4
<i>capitella</i> , F. ....	45	[ <i>discopunctana</i> , Clem. ( <i>Cœ-</i>	
<i>catenana</i> .....	191	<i>lostathma</i> ), p. 136.]	
[ <i>caudana</i> , F. ( <i>Rhacodia</i> ),		<i>distigmatana</i> .....	201
p. 131.]		<i>dives</i> .....	229

	No.		No.
divisa	271	godmani	57
dominicella	104	gracilis	93
donatella, <i>Wkr.</i>	47	<i>gregariella</i> , Mrt.=desmodi- ella, <i>Clem.</i>	224
dorsivittella, <i>Z.</i>	26	grenadella	282
effoetana, <i>Mschl.</i>	188	grenadensis	90
eromene	22	griseana, <i>F.</i>	108
errantella	227	[* <i>griseana</i> , <i>Z.</i> =zelleri, <i>Wlsm.</i> & <i>Drnt.</i>	108]
endactyla, <i>F. &amp; R.</i>	18	<i>griseanum</i> , <i>Z.</i>	108
excitana, <i>Mschl.</i>	180	gudmannella	52
exclarella, <i>Mschl.</i>	48	hedemanni	288
exornata, <i>Z.</i>	86	heliopsiella, <i>Chamb.</i>	220
extranea	37	† <i>heliopsiella</i> , <i>Chamb.</i> †helio- psiella	220
<i>exvagana</i> , <i>Wkr.</i> =strenuana, <i>Wkr.</i>	173	[hexadactyla, <i>L.</i> (Orneodes), p. 59.]	
familiaris, <i>Z.</i>	267	hirsutevestita	279
fasciata	5	ichthyochroa	199
fastuosa, <i>Z.</i>	141	<i>ignita</i> , <i>Z.</i> = auriferalis, <i>Wkr.</i>	161
figurana, <i>Z.</i>	179	<i>immunda</i> , <i>Z.</i>	111
flammulella	39	immundus, <i>Z.</i>	111
flavedana, <i>Clem.</i>	193	indignus	76
flaviciliata	100	<i>ingricella</i> , <i>Mschl.</i> = con- fusella, <i>Wkr.</i>	80
flavicollis	182	inquinatus, <i>Z.</i>	7
<i>flavocellana</i> , <i>Clem.</i> =strenu- ana, <i>Wkr.</i>	173	insignitana, <i>Mschl.</i>	189
flexuosa	218	insularis (Anacampsis)	63
[foenella, <i>L.</i> (Eucosma), p. 126.]		insularis (Auximobasis)	96
forficulella	150	insulella	231
fragilella	260	† <i>insulse</i> lla, <i>Wlsm.</i> =insulella, <i>Wlsm.</i>	231
frontella	249	<i>intermediella</i> , <i>Chamb.</i> =pudi- bundella, <i>Z.</i>	28
frontestrigata	269	iophlebia, <i>Z.</i>	148
[fulgens, <i>F. &amp; R.</i>	161]	isabella, <i>F. &amp; R.</i>	113
fulvidella	20	jamaicana, <i>Wlsm.</i>	163
fulviguttata, <i>Z.</i>	140	jamaicana, <i>Wkr.</i>	190
† <i>fulviguttella</i> , <i>Wlsm.</i> =fulvi- guttata, <i>Z.</i>	140	jamaicensis	51
[fumosa, <i>Z.</i> (Trichostibas), p. 114.]		joviella	82
<i>fuscotrigella</i> , <i>Chamb.</i> = luteotrigella, <i>Chamb.</i>	54	juventellus	77
gelidella, <i>Wkr.</i>	87	kirbyi, <i>Mschl.</i>	88
<i>gemmata</i> , Grt. = punctella, <i>Cram. &amp; Stoll</i>	139	kittella	25
* <i>gemmiferella</i> (? <i>Clem.</i> ), <i>Mschl.</i> = attenuatella, <i>Wkr.</i>	123	§ <i>lacteella</i> , <i>F.</i> =albanus, <i>F.</i>	112
gemma	155	lacteipalpis	207
[ <i>gilvidorsis</i> , <i>Z.</i> = tenuis, <i>F. &amp; R.</i> ]	6]	lacticaudellum	71
* <i>gilvidorsis</i> , <i>Hdm.</i> =pumilio, <i>Z.</i>	6	† <i>lanceolana</i> , <i>Hb.</i>	162
* <i>gilvidorsis</i> , <i>Hdm.</i> =montis- christi, <i>Wlsm.</i>	8	lanceolana, <i>Hb.</i>	162
glandiferella, <i>Z.</i>	38	lanceolata	250
<i>glaucopidella</i> , <i>Gn.</i> = fulvi- guttata, <i>Z.</i>	140	lapidella	62
		<i>laterana</i> , <i>Rbs.</i> = flavedana, <i>Clem.</i>	193
		laterestriata	55
		[ <i>lativittella</i> , <i>Wkr.</i> = walchi- ana, <i>Cram. &amp; Stoll</i>	108]



	No.
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<i>lentiginosa</i> , Z. ....	278
<i>lepidana</i> , Clem. ....	206
<i>lespedeææ</i> , Wlsm. = <i>attenua-</i> <i>tella</i> , Wkr. ....	123
<i>leucocephala</i> ....	44
<i>leucodocis</i> , Z. ....	300
[ <i>linneella</i> , Cl. ( <i>Chrysoclista</i> ), p. 118.]	
[ <i>literana</i> , L. ( <i>Oxygrapha</i> ), p. 131.]	
<i>lithochroma</i> ....	117
<i>livens</i> ....	178
<i>longipalpana</i> , Mschl. ....	172
<i>lustromarginata</i> ....	181
<i>luteostrigella</i> , Chamb. ....	54
<i>lycopersicella</i> ....	36
<i>macrocera</i> ....	102
<i>maculata</i> ....	138
<i>maculicornis</i> ....	247
<i>mahalebella</i> , Gn. ....	151
<i>mahalebells</i> , Gn. ....	151
<i>manellus</i> , Mschl. ....	73
<i>mangelivora</i> ....	60
<i>marginata</i> ....	132
<i>marmoreipennis</i> ....	154
<i>mediocris</i> ....	95
<i>metallifera</i> ....	131
* <i>microdactylus</i> , Hdm. = bi- punctatus, Mschl. ....	15
<i>mimasalis</i> , Wkr. ....	292
<i>minuscula</i> ....	246
<i>minutella</i> , F. ....	261
<i>mirella</i> , Mschl. ....	276
<i>monochroma</i> ....	185
[ <i>monodactyla</i> , L. ( <i>Ptero-</i> <i>phorus</i> ), p. 58.]	
<i>montis-christi</i> ....	8
<i>negans</i> ....	184
<i>nesiotes</i> ....	166
<i>nesitis</i> ....	241
<i>nigrovitta</i> ....	266
<i>niveipunctata</i> ....	297
<i>niveipunctatus</i> ....	297
<i>nivosella</i> , Wkr. ....	143
<i>noctivaga</i> ....	301
<i>noctuella</i> , Mdnr. = <i>coffeella</i> , G.M. & Prrott. ....	214
<i>noctuina</i> ....	293
<i>nolckenii</i> , F. & B. = <i>helio-</i> <i>psiella</i> , Chamb. ....	220
<i>notatella</i> , Wkr. ....	84
<i>obligatella</i> , Mschl. ....	144
<i>obseratella</i> , Z. ....	67
<i>occultum</i> ....	283

	No.
<i>ochracea</i> , Mschl. ....	284
<i>ochraceella</i> , Tgstr. ....	273
[ <i>ophthalmicana</i> , Hb. ( <i>Acalla</i> ), p. 131.]	
<i>ornata</i> ....	230
<i>ornatipalpella</i> ....	23
<i>ossipellis</i> ....	9
<i>ostariella</i> ....	24
<i>ovata</i> , Z. ....	146
[ <i>oxydactyla</i> ....	1]
[ <i>oxydactylus</i> , Wkr. ....	1]
<i>paleaceus</i> , Z. ....	14
<i>pallida</i> , Z. ....	118
<i>pallidicostella</i> ....	149
[ <i>pallidochrella</i> , Chamb. ....	38]
<i>pallidorsella</i> , Z. ....	268
<i>paradisea</i> ....	157
<i>parallelana</i> ....	198
<i>participatus</i> , Mschl. ....	16
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<i>parvellum</i> , F. ....	114
<i>parvus</i> ( <i>Pterophorus</i> ) ....	10
<i>parvus</i> ( <i>Hypoclopus</i> ) ....	285
† <i>pastulella</i> , F. = <i>punctella</i> , Cram. & Stoll ....	139
<i>paucella</i> , Wkr. ....	83
<i>paucellus</i> , Wkr. ....	83
<i>pavonacella</i> , Clem. ....	158
† <i>pavonicella</i> , Chamb. ....	158
<i>penicillata</i> ....	34
[ <i>pentadactyla</i> , L. ( <i>Alucita</i> ), p. 59.]	
<i>percussella</i> , Z. ....	245
<i>peregrinana</i> , Mschl. = <i>ple-</i> <i>beiana</i> , Z. ....	174
<i>permixtella</i> ....	235
<i>persimilella</i> ....	98
<i>perspicua</i> ....	40
<i>phantasmella</i> ....	244
[ <i>phycidella</i> , Z. ( <i>Blastobasis</i> ), p. 91.]	
[ <i>piceana</i> , L. ( <i>Archips</i> ), p. 133.]	
<i>picticornis</i> ( <i>Aristotelia</i> ) ....	32
<i>picticornis</i> ( <i>Coleophora</i> ) ..	116
<i>piperatella</i> ....	128
<i>piperatus</i> ....	75
<i>plebeiana</i> , Z. ....	174
<i>plumbeolata</i> ....	58
<i>plumella</i> ....	262
<i>plumifrontella</i> , Clem. ....	298
<i>plumifrontellus</i> , Clem. ....	298
<i>poeyi</i> ....	296
[ <i>pomonella</i> , L. ( <i>Cydia</i> ), pp. 125, 130.]	
<i>popeanella</i> , Clem. ....	289
[ <i>populella</i> , Cl. ( <i>Anacamptis</i> ), p. 79.]	

	No.		No.
postpallescens.....	50	scardina, Z. = popeanella,	
præstans .....	212	<i>Clem.</i> .....	289
præustus, <i>Mschl.</i> .....	12	schulzella, <i>F.</i> .....	133
prolectana, <i>Mschl.</i> .....	202	sciurella .....	56
psoricopterella .....	66	seythropiella .....	255
pudibundella, Z. ....	28	<i>selia</i> , Chamb. = glandiferella,	
<i>pudibundella</i> , Chamb. = rubi-		Z. ....	38
della, <i>Clem.</i> .....	35	siderea .....	142
pulchricornis .....	115	similatella, Z. ....	238
pulicella .....	30	similis .....	124
pulverea .....	222	simplex .....	213
pulverella .....	239	[simulana, <i>Hb.</i> ( <i>Epinotia</i> ),	
pumiliella .....	264	p. 129.]	
pumilio, Z. ....	6	sinuata, <i>F.</i> .....	109
punctella, <i>Cram. &amp; Stoll</i> ..	139	<i>sinuatus</i> , <i>F.</i> .....	109
[pusilla, Z. ....	285]	smithiana .....	175
* <i>pusilla</i> , Wlsm. = parvus,		[solandriana, <i>L.</i> ( <i>Eucosma</i> ),	
<i>Wlsm.</i> .....	285	p. 126.]	
pusillidactyla, <i>Wkr.</i> .....	3	solenobiella .....	259
<i>pusillidactylus</i> , <i>Wkr.</i> .....	3	[soraria, Z. ( <i>Anadasmus</i> ),	
† <i>pustulata</i> , <i>F.</i> = punctella,		p. 100.]	
<i>Cram. &amp; Stoll</i> .....	139	sordidata, Z. ....	147
<i>pustulella</i> , <i>F.</i> = punctella,		sphenophora .....	42
<i>Cram. &amp; Stoll</i> .....	139	spinosum .....	228
quingueguttata .....	134	squamosa .....	110
quinguepunctella .....	61	stigmatophora .....	121
recticostella .....	105	stratellus .....	78
reduplicata .....	253	strenuana, <i>Wkr.</i> .....	173
reflexus, <i>F.</i> .....	295	<i>strigosella</i> , <i>Wkr.</i> = confusella,	
rendalli .....	234	<i>Wkr.</i> .....	80
repandana, <i>Wkr.</i> .....	194	submicans .....	168
<i>restitutana</i> , <i>Wkr.</i> = rostrana,		subolivacea ( <i>Blastobasis</i> ) ..	91
<i>Wkr.</i> .....	195	subolivacea ( <i>Phalonia</i> ) ....	200
rhizophoræ .....	216	subsimilis .....	81
rimifalis, Z. ....	160	<i>subtilis</i> , <i>Hb.</i> = punctella,	
<i>rivulella</i> , <i>Mschl.</i> = capitella,		<i>Cram. &amp; Stoll</i> .....	139
<i>F.</i> .....	45	<i>subversana</i> , Z. = strenuana,	
<i>robustella</i> , <i>Wkr.</i> = capitella,		<i>Wkr.</i> .....	173
<i>F.</i> .....	45	suffumigata .....	106
[rœsella, <i>L.</i> ( <i>Heliodines</i> ),		<i>synophrys</i> , <i>Meyr.</i> = caffer, Z.	2
p. 108.]		tarsimaculata .....	122
† <i>rosasuffusella</i> , Chamb. =		<i>tecnidion</i> , Z. = pusillidactyla,	
roseosuffusella, <i>Clem.</i> ....	27	<i>Wkr.</i> .....	3
roseosuffusella, <i>Clem.</i> ....	27	tectonica, <i>Mschl.</i> .....	203
rostrana, <i>Wkr.</i> .....	195	tegulella .....	69
rotundipennis .....	186	<i>tenera</i> , Z. = albanus, <i>F.</i> ....	112
<i>rubensella</i> , Chamb. = rubi-		<i>tenuicaudella</i> .....	226
della, <i>Clem.</i> .....	35	[ <i>tenuis</i> , <i>F. &amp; R.</i> .....	6]
rubidella, <i>Clem.</i> .....	35	tetraonella .....	263
rupicella, Z. ....	281	thomæ, Z. ....	11
rusticus .....	74	tibialis, Z. ....	107
saltatrix .....	211	tischeriella .....	258
sancte-crucis .....	233	<i>transferrana</i> , <i>Wkr.</i> ..	164
sancti-vincenti .....	125	<i>transferranus</i> , <i>Wkr.</i> .....	164
[scalariella, Z. ( <i>Dialectica</i> ),		translucida .....	41
p. 150.]		triangularis, <i>Mschl.</i> .....	152

	No.		No.
triangularis, <i>Wlsm.</i> .....	92	vincentanus, <i>Wlsm.</i> = trans-	
triatomella .....	290	ferranus, <i>Wkr.</i> + .....	164
trigonella .....	68	virididorsana, <i>Mschl.</i> .....	170
tripunctata .....	130	vitellus, <i>Poey</i> .....	294
<i>tristis</i> , F. & R. = biferana,		[walchiana, <i>Cram. &amp; Stoll</i> .	108]
<i>Wkr.</i> .....	159	*walchiana, Z. = griseana,	
trossulella .....	29	F. ....	108
umbraticostella .....	257	<i>walkeri</i> , <i>Wlsm.</i> = caffer, Z...	2
umbratipalpis .....	286	walsinghani, <i>Mschl.</i> .....	299
undosa .....	240	[wœberiana, <i>Schiff.</i> ( <i>Enar-</i>	
unicolor .....	221	monia), p. 122.]	
unipuncta .....	219	<i>xanthorrhoea</i> , Z. = notatella,	
uterella .....	272	<i>Wkr.</i> .....	84
variolata .....	97	xylinella, <i>Wkr.</i> .....	302
venticola .....	210	*xylostella, <i>Mschl.</i> = crucifer-	
vicinitata, <i>Mschl.</i> .....	204	arum, Z. ....	153
<i>vincentana</i> , <i>Wlsm.</i> = trans-		[zelleri, <i>Wlsm. &amp; Drnt.</i> ....	108]
ferranus, <i>Wkr.</i> + .....	164	zingarella .....	70

5. Observations on the Ophthalmoscopic Appearances of the Eyes of the Order Primates. By G. LINDSAY JOHNSON, M.A., M.D., F.R.C.S., F.Z.S.

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(Plates II.—VI.)

Adopting the classification given in Sir W. Flower's classical work on the Mammals, I include in the order Primates: Man, Monkeys, Marmosets, and the suborder Lemuroidea. I have found that a comparison of the ophthalmoscopic appearances of the fundus oculi of the various members of this most important order enables us to arrive at certain definite conclusions, which I believe to be of interest to zoologists.

All the animals, including Man, were examined by me in a darkened room with the same amount and the same kind of illumination, and also with the same degree of magnification.

Only animals in perfect health were selected, and, so far as possible, several animals of the same species were examined in order to preclude the possibility of abnormal fundi. Moreover, in all cases both eyes were examined and ascertained to be similar in all respects before a drawing was made. As a further precaution, each detail of the drawing as it was being painted by my artist, Mr. Head, was confirmed by myself in the living eye, and altered (if necessary) until it represented the original in all respects.

As regards keeping the animals quiet, I found considerable difficulty at first, but as my experience increased the difficulties vanished. In no case was any drug or anæsthetic used, but in the case of a few of the wilder Monkeys a net was thrown over them. In all the other cases the animal was held gently by the keeper in his lap. The animal rarely struggled, and usually became

quite reconciled and contented. I found that extreme gentleness, together with petting the animals, overcame their fears, so that no force was needed; nor, indeed, would I have suffered it to be employed under any circumstances. A few of the Monkeys and Lemurs were observed in the Belle Vue Gardens, Manchester, some in Mr. Jamrach's and Mr. Hamlin's collections, and in various travelling menageries, since they were not to be found in the Society's Gardens. In all examples of 38 distinct species of Monkeys and Lemurs were examined, including forms of every genus which could be found in the Society's and other menageries.

All the observations were made by what is termed the direct method with the ophthalmoscope, the instrument being used within an inch of the animal's eye without an interposed magnifying lens, thus presenting to the observer an upright picture of 10 diameters' magnification. This method is preferable to the indirect in which a lens is used, as the image then obtained is inverted, and only of 3 to 4 diameters' magnification, which is also less distinct than the larger upright image. In most cases cocaine and homatropine were dropped into the eye to obtain a larger pupil and consequently more light.

The fundus of the fair European human eye appears, when viewed with the ophthalmoscope, of an orange-red colour, pretty uniformly distributed over the entire fundus; only when we get towards the confines of the visible field does the background become more intermixed with streaks of pigment. A little to the inner or nasal side of the centre of the field we observe the disc of the optic nerve, of a pinkish colour and slightly oval shape, with the major axis vertical. From the centre of this disc the scarlet arteries and lake-red veins of the retina proceed, passing in every direction, dividing into numerous branches. In the dark-coloured races the appearances are similar, save that the orange-red background is replaced by a reddish brown, owing to the great increase of dark pigment (see Plate II.).

Only one part of the fundus is wholly free from vessels, and that is at and around the macula lutea or yellow spot. The macula is a small pit or depression situated in the axis of vision, about  $2\frac{1}{2}$  disc breadths from the disc to the outer or temporal side. It appears different in colour in the eyes of different individuals. Generally it appears as a dark-reddish circular patch, with a bright spot in the centre, and in some cases surrounded by a circular glistening halo or ring, well defined on its internal margin, but fading away into the general background towards its external border (marked *d*, Plate II.). Occasionally a second or even a third ring may be seen inside this large one, all having the fovea as a common centre.

The macula being in ourselves the seat of most acute vision, considerable attention has been given to this highly differentiated area, which has an actual diameter of about 1.5 mm. It is only in this region, the size of a pin's head, that we see perfectly, our acuteness of vision decreasing rapidly outside this region. In



most books which treat on the subject we find it stated that among mammals Man and the Anthropoid Apes (the Simiidae) alone possess a macula ; but I find, as I will presently explain, that the existence of the macula is not restricted to these only.

In addition to the scarlet and lake-red branches of the retinal vessels which proceed from the disc, a large number of interrupted orange-yellow and red vessels, uniformly coloured and much broader than the artery and the veins, can be observed, anastomosing so as to form a network (see *cc*, Plate V.). These vessels belong to the choroid, a vascular structure underlying the retina. As that portion of the retina which lies in contact with the choroid is pigmented, these choroidal vessels can only be distinctly observed in fair people and in albinos. I am, of course, speaking of the normal eye of the adult, and not taking into consideration defective senile or pathological conditions.

It is not only with regard to the degree of distinctness with which the choroidal vessels can be observed that the ophthalmoscopic appearance differs in fair and dark people. The colour of the fundus likewise varies in proportion to the pigmentation of the individual. In very fair people the colour is a bright vermilion, which gradually tends towards a reddish brown in people with very dark hair and skin, until we find it of a chocolate colour in the negro. Except in colour, the appearance of the fundus oculi does not differ in the various races of Man. I need hardly say that of course the colour of the macula varies with the general colour of the fundus, being always distinguishable as a darker patch than the rest, although occasionally, in very dark Europeans, I have seen it of a decidedly redder hue than the rest of the fundus.

The chocolate-coloured field, with a darker chocolate-coloured circular patch indicative of the macula region bordered by a bright scintillating ring, characteristic of the negro, is likewise what we find when we examine the eye of the Simiidae, but we find the fundus varies greatly in colour once we descend below this group. Even in the Gibbons, the lowest of the Simiidae, we already find a commencement of this departure.

Throughout the Anthropoidae the arrangement of the retinal vessels is the same as in Man, the first indication of variation being found as soon as we reach the Lemuroidae.

The disc is oval, with the long axis vertical, at times more or less circular, or practically the same as in Man. Here again we only find a difference in the Lemuroidae, which all have a circular disc.

The Lemuroidae have no macula, the existence of which ceases with the last of the true Monkeys. In other words, we find a striking resemblance between the appearance of the eye of Man and the entire order Anthropoidae, although in many details we can trace as we descend the scale a tendency towards that lower form which reveals itself to us when we examine the Lemuroidae ; and here again we find a gradual departure from the higher type

as we wend our way from the Lemurs through the Galagos down to the Aye-Aye.

The eyes of all the Primates below Man are smaller than our own, but this is not so in proportion to the size of the body. I have found, for instance, that the transverse diameter of the globe of the eye of the half-grown Gorilla which lately died in the Society's Gardens measured 20·7 mm., which is the size of the eye of a child between the age of 9 and 11. Of course the eye of a small Marmoset is very much smaller, being in proportion to the size of the animal.

There are other distinctive differences between Man, the Monkeys, and Marmosets, in other words between the Anthro-poidæ on the one hand and the Lemuroidæ on the other.

The pupil of Man and the Anthropoidæ is always circular, whilst we find a vertically oval pupil in all the Lemuroidæ. In addition to this I find from repeated observations that all the Anthropoidæ or true Monkeys are able to accommodate their eyes for near objects by converging both eyes on to a single point, and in so doing the pupil contracts as in Man, though to a less degree. The Lemuroidæ have not this power of convergence; and although I have noticed the power of convergence in all the Monkeys, I find it is only a transition stage—that is to say, they employ it with hesitation and difficulty, much in the same way as an infant uses its legs when learning to walk, since they cannot converge for more than one or two seconds at most. If you hold a small bright-coloured object near the nose of a Monkey, you will observe the eyes converge immediately in a horizontal plane, and the pupils contract slightly, but the next moment the eyes return to parallel vision, though not necessarily in a horizontal plane, being often accompanied by a slight elevation upwards.

We thus find that we must draw a broad distinction between Man and Monkeys as a group and the Lemuroidæ. Man and all the Monkeys and Marmosets without exception possess a macula, a circular pupil, and converge when accommodating for near objects. These characteristics are necessary for binocular vision. The Lemuroidæ have not got binocular vision and therefore we find all these peculiarities absent.

Going more into detail we find that every family has some characteristic peculiarity. Thus the eyes of the Gorilla, Chimpanzee, and the Orang closely resemble that of the negro, except that around the disc the whitish fine streaks are more marked. Were they as strongly marked in Man they would be attributed to a congenital defect known as opaque nerve-fibres, although the defective human eye shows these opaque nerve-fibres wholly opaque, whilst in these Apes they are more or less translucent. These translucent nerve-fibres radiating from the disc become somewhat more marked as we descend the scale. In the Gibbon we find an extreme prominence of the choroidal vessels.

In the next family, the Cercopithecidæ, we notice in some genera an approximation to the Simiidæ, notably in the Black Ape,